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AMERICAN ANTHROPOLOGIST

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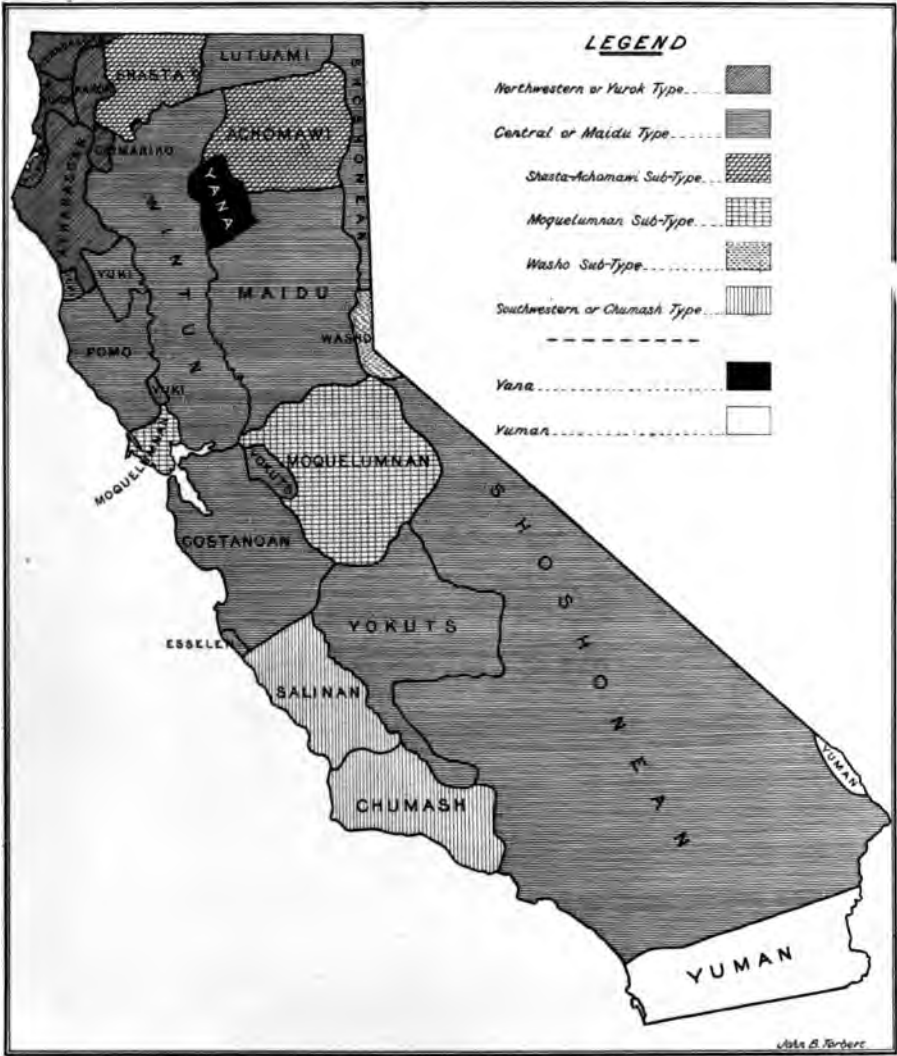
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MORPHOLOGICAL CLASSIFICATION OF CALIFORNIAN LINGUISTIC FAMILIES

American Anthropologist

NEW SERIES

VOL. 5

JANUARY-MARCH, 1903

No. 1

THE NATIVE LANGUAGES OF CALIFORNIA

By ROLAND B. DIXON AND ALFRED L. KROEBER

INTRODUCTION

The following paper is the result of coöperative research on the part of the American Museum of Natural History, maintaining an ethnological expedition in California through the generosity of Mr Archer M. Huntington and of the Department of Anthropology of the University of California, which owes its existence to the munificence of Mrs Phoebe A. Hearst.

A few years ago one of the authors was engaged in a study of the Maidu language of northern California. It became evident almost at the outset that there was considerable structural similarity between this language, the Klamath language,¹ and the Sahaptin family of languages on the Columbia river. A positive relationship between these languages seemed probable until a more thorough investigation had been made and comparative material collected from several other Californian languages. It then became apparent that the general plan on which Maidu, Klamath, and Sahaptin were built was common to other languages of the region as well, but that this noticeable similarity extended no further than structure. The vocabularies of the languages were distinct. Hence relationship, in the only precise and allowable sense of the term, could not be alleged, and it became apparent that the diver-

¹ The Klamath with its dialect, the Modoc, constitutes the Lutuamian family of Powell. The territory occupied by the stock was partly in California, chiefly in Oregon.

sity of languages which had always been assumed for California, really existed.

This diversity is the most marked characteristic of California as an aboriginal linguistic area. America as a whole is a region of great linguistic diversity, and this tendency toward diversification reaches its climax in California, where twenty-two distinct stocks of languages are spoken within the boundaries of the state, according to Powell's accepted classification. That nearly half of the linguistic families represented in the United States¹ should thus occur within so small an area marks California as perhaps the most remarkable region for linguistic diversity known. The structural similarity of some of these distinct stocks evidently has a bearing on the larger question of the extreme diversity of the region, which is the fundamental problem of California linguistics. An attempt was therefore made by the writers to secure, through field investigation, information concerning the grammatical structure of all Californian languages. This task was rendered necessary by the fact that with one or two exceptions the grammar of these languages was wholly unknown. On the material thus collected this paper is based.²

The main purpose of the paper is to point out that Californian languages may be classified into several groups. It must be clearly understood, however, that the classification that has been attempted

¹ Fifty-two between Canada and Mexico.

² Besides Gatschet's "The Klamath Indians of Southwestern Oregon" (*Cont. N. A. Eth.*, vol. 11), which contains an exhaustive grammatical account of this semi-Californian language, there is only one published grammar of a Californian language, that of the Mutsun (Costanoan family), by Arroyo de la Cuesta, published as vol. IV of Shea's *Library of American Linguistics*. B. Sitjar's Vocabulary of San Antonio Mission (Shea, vol. VII), of the Salinan family, has prefixed to it some fragmentary grammatical notes extracted from the vocabulary by the editor. There is also a brief sketch of the Chumeto language (Moquelumnan family), by A. S. Gatschet, in *The American Antiquarian*, vol. V, 71, 173. Of the three great extra-Californian languages extending into the state, Athabascan is the best known grammatically. Shoshonean and Yuman are practically unknown. With the exception of Klamath and Esselen, material has been collected by the authors from every stock, including the one or two which were already more or less known. Esselen has become extinct and the morphological information regarding it has been derived from two manuscripts for the use of which the authors are indebted to the courtesy of the Bureau of American Ethnology. Mr A. M. Tozzer has aided in the collection of material by work on Moquelumnan. The only Shoshonean material obtained by the authors was from the Ute, but valuable information in regard to one of the Shoshonean dialects of southern California was rendered available to them through the courtesy of a correspondent. Mr P. E. Goddard has kindly revised some of the Hupa (Athabascan) material.

deals only with structural resemblances, not with definite genetic relationships; that we are establishing not families, but types of families.¹ When several linguistic stocks have been put into one group, there is no implication that they form one family, in the sense in which this word is accurately used in philology. The classification here proposed is really one of another order from that used by Powell, for structure and not lexical content is made the basis on which all comparisons are made.²

BASIS OF CLASSIFICATION

The incorporation into the verb of the pronoun, and at times even of the noun, has generally been regarded as the most characteristic and fundamental feature of American languages. The fact, however, that many Californian languages differ from the great bulk of the languages of the continent in that they lack incorporation, makes the question of its presence or absence a consideration of prime importance.

Syntactical cases — that is, subjective, objective, and possessive — are not in general found in American languages, and on this account their frequent presence in California is of considerable importance. Indeed, the presence of syntactical cases has a double right to be considered as a factor in classification, from the fact that there seems to be a direct connection between syntactical cases on the one hand and incorporation on the other.

In a fully incorporating language, such as Iroquois or Nahuatl, cases are theoretically a superfluity. Apart from any possible in-

¹ The Uto-Aztec languages may serve as a hypothetical example of what is meant. According to some authorities Shoshonean, Piman, and Aztec constitute each a distinct family by itself. Even these authorities would admit, however, that the three families have certain close and rather striking morphological similarities. Boas (*Internat. Cong. Anthropology*, 1894, p. 339) has attempted a similar classification for the North Pacific coast. It is with similarities of this sort, and groups based on them, that the present paper deals.

² With one or two doubtful exceptions all the material collected by the authors supports as correct the classification of stocks made by Powell. The possible exceptions are that the Shasta (Sastean) and Achomawi (Palaihnihan) in the north, and the Costanoan and Moquelumnan in the south, may respectively constitute single stocks. Gatschet has already noted the possibility of connection between Shasta and Achomawi; and Costanoan and Moquelumnan, until separated by Powell, were always regarded as related. Evidence in both cases is as yet inconclusive, so that Powell's separation of the languages in question must be provisionally accepted.

corporation of the noun-object itself, both subject and object are in such languages regularly represented in the verb by pronominal elements, which, by their form or interrelation, make clear the relation to each other of the two uninflected nouns standing outside of the verb. This constitutes the so-called appositional structure, in which the sentence is outlined in the polysynthetic verb by means of the verb radical and the two pronominal elements that refer to the subject and object, while these two nouns themselves stand, as it were, in apposition to the pronominal elements and have their functions made clear by them. The nouns in the sentence do not form part of its structure, but merely hang to it. Chinook furnishes a clear example of this type of syntax and Algonkin another. In a language of this type, therefore, the relation of the subject and the object of the sentence is made sufficiently clear by the verb and any further expression of this relation by case-endings is unnecessary.

If, on the other hand, the relation of the nouns in the sentence is clear from their inflectional endings, it becomes superfluous again to express this relation by incorporating the pronouns in the verb. Therefore the existence of syntactical cases in a language must tend to render less probable the existence therein of incorporation and *vice versa*.

In regard to the possessive relation, the chief of the purely internominal relations, the same two contrasted methods of expression are also to be distinguished. As a rule in American languages this relation is expressed by means of the possessive pronoun, or, as it could better be called in most cases, possessive pronominal particle. On the other hand in other languages, the same relation is often expressed by a purely formal element. In the phrase 'woman her-foot,' the element 'her,' in spite of definite concrete significance, is really only a syntactical means. In the phrase 'woman's foot,' the method of expression is fundamentally different, a purely formal element instead of a material one being used for formal purposes. It is evident, moreover, that if both the subjective-objective and the possessive relations are expressed by case-inflections instead of pronominal elements, the pronouns, being released from their syntactical functions, will tend to become independent parts of speech not very different from nouns. Under such

circumstances they may themselves assume the case-inflections of nouns. When this occurs, their morphological value becomes identical with that of substantives,¹ instead of being merely the equivalent of an inflection.

Of course it does not follow that the presence of either pronominal incorporation or of syntactical case-inflection necessitates the absence of the other. Eskimo is a very strictly incorporating language (in regard to the pronominal elements) and yet has a purely formal subjective-possessive case that is invariably used. Conversely, the lack of one of these features does not necessarily imply the use of the other, inasmuch as there are languages in other parts of the world which employ neither of these means. But that there must be a tendency for these two very different methods of expression to crowd out and replace each other, seems obvious. That, on the whole, such a tendency actually is operative in American languages is evident.

It therefore seems that the two factors of pronominal incorporation and of syntactical cases, both on account of their intrinsic importance and their interdependence, go far toward characterizing two very different types of languages and should be accorded first consideration in any grouping of languages in an area where both occur.

Naturally more or less allied to formal cases and sometimes difficult to distinguish from them, are material cases, or as many prefer to call them, appositions, such as locatives and instrumentals. Cases of this kind, while not the most deep-going feature of any language, are nevertheless of some importance on account of their obvious connection with syntactical cases, for the occurrence of the latter would naturally, through the operation of the principle of analogy, extend itself to an occurrence of the local cases. Such cases as appositions, therefore, are given consideration in the present classification.

A fourth feature deserving considerable attention is phonetics. This is obviously of some importance in itself and is given additional weight from the fact that, at least in California, simple phonetics and

¹This actually occurs in Sahaptin. For instance, *enmi*, my, far from being a prefix or suffix or even a worn-down enclitic, is an independent word composed of the pronominal root *en* and the case-ending *-mi* which is used on all nouns. The same condition exists in Maidu and in several other Californian languages.

simple structure usually go together. It would seem that the two features are causally related.

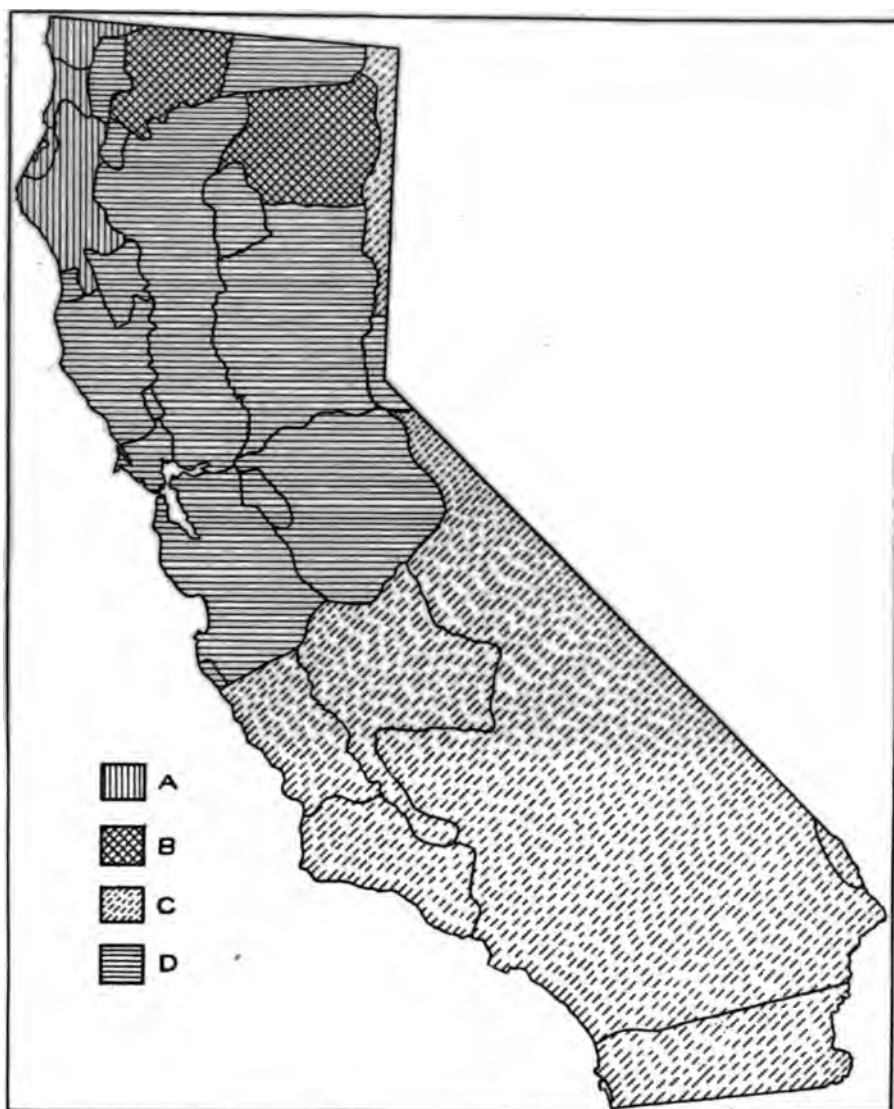
By simple phonetics, however, is meant not so much that the sounds of the language are soft and pleasing as that these sounds are clear-cut and distinct and full, and that the words resulting from the combination of these sounds are, so to speak, transparent and readily separable into their component parts. In such a language the component parts of a word are recognizable, whereas in a language possessing complex phonetics they are so amalgamated as individually to be obscure. Of course, harshness and complexity are not necessarily always coëxistent; there can be and indeed there are phonetically simple languages which are quite harsh. But as a general rule simplicity and smoothness, and complexity and harshness, do actually occur together.

Incorporation, syntactical cases, appositions and phonetics—it is in reference to these four fundamentally related features that the following classification of Californian languages has been primarily made. There are a number of other features, especially the occurrence of a plural and of reduplication, on which material has been collected, and which have been given some consideration; but they all are of much less importance than the four related characteristics which have been enumerated.

To aid in the consideration of the features above discussed, it may be said in anticipation that the languages of California appear to fall into three geographical groups. The first and largest group occupies the interior of the state. On the coast there are two smaller groups—a northern and a southern.

PHONETICS

On the whole the Californian languages are smoother and softer than other American languages. Throughout the state there are only about four stocks that can be considered at all rough or difficult in pronunciation. Three of these are the Yurok, the Wishok, and the Hupa with its related Athabaskan dialects. These languages are spoken over a continuous area in the northwestern part of the state. The fourth language of this class is the Achomawi, of the Pit river region in the northeastern part of the state. This



LANGUAGES OF CALIFORNIA. I—PHONETICS

A, Northwestern group (roughest). *B*, Shasta-Achomawi sub-group (less rough). *C*, Southern group (in general soft, but obscure). *D*, Central group (soft and distinct).

language shows less phonetic difficulty or complexity than the three others. Shasta, which is possibly genetically related to Achomawi and which, territorially, lies between it and the Hupa-Yurok-Wishosk phonetic group, is less smooth than the remaining languages of the state.

It will be observed that all these comparatively rough languages are situated in the extreme north of California and thus are nearest to the remarkably rough and harsh languages of the Columbia river and the North Pacific coast, such as Chinook and Selish. They fall far behind these, however, in their phonetic difficulty. Even when compared with North American languages in general, they are not notably rough.

In comparison with these few northern Californian languages, the remaining languages of the state must be characterized as soft. There are, however, sufficient differences among them to make them fall into two groups—one occupying the central part of the state and one the southern. There is not much difference between these two groups in point of mere smoothness; the central group, however, is distinguished by a certain phonetic distinctness, contrasting with some obscurity in the south.

In the central group there are some remarkably vocalic and harmonious languages, such as Maidu and Wintun. There are others that are not so. Yuki explodes many consonants, and Pomo has a frequency of aspirated gutturals. All the languages of the group, however, are alike in being phonetically clear-cut. The syllables have a simple structure, and preserve their distinctness when joined. The elements of a compound word remain visible, being altered little or not at all by their juxtaposition.¹

¹ Examples showing variability of stems in composition in Yurok and Wishosk, and of invariability in Maidu and Yana :

	YUROK	WISHOSK	MAIDU	YANA
<i>noo</i>	<i>pelin</i>	<i>ra't-er</i>	<i>bak-</i>	<i>pa-sasi</i>
<i>nii-L</i>	<i>p'leli</i>	<i>ra' L-el</i>	<i>bak-in</i>	<i>pa-kisi</i>
<i>nāā-a</i>	<i>p'lerer</i>	<i>ra't-se</i>	<i>bak-ityop</i>	<i>pa-rtcesi</i>
<i>ne-mi</i>	<i>peloī</i>		<i>wa-bak-do</i>	<i>pa-utisi</i>
<i>neErEr-pi</i>			<i>te-bak-do</i>	

Examples of the distinctness of syllables as found in compound words in languages of the central group :

MAIDU.—*tetalamotikasi* = I made (him) squeeze (them) with (his) feet (*te-ta-ta-moto-ti-ka-si* = with-feet-press-together-causative-tense-I). *sohāhamotiweten* = after having made him carry (them) in a bundle on (his) shoulder (*so-ha-ha-moto-ti-weten* = shoulder-carry-together-causative-after-having).

In the southern group* these characteristics do not occur so prominently. Instead of the full simple sounds of the central region, obscure sounds are often found. Word elements are also less simple, and hence the structure of compound words is not so transparent as in the central group. Shoshonean is a fair example of this phonetic type. As has been said, however, none of the languages of this area can in any sense of the word be called harsh.

The northern phonetic group thus includes Athabaskan, Yurok, Wishosk, and Achomawi.

The central phonetic group includes Maidu, Wintun, Yana, Yuki, Pomo, Moquelumnan, Costanoan, Esselen, Washo, Chimariko, Karok, Lutuami, and Shasta, the last approximating the somewhat rough Achomawi.

The southern phonetic group includes Shoshonean, Yuman, Chumash, Salinan, and Yokuts.¹

The distribution of these groups is shown in plate II. Excepting the first, each of these three groups of languages extends over a continuous area.²

¹ The occurrence in California of some of the more uncommon sounds is the following: *tl'* (palatal *l'*) is found very prominently in Yurok, Wishosk, and Athabaskan. It also occurs in Wintun. In the south a softer form occurs in Chumash and Salinan.

ng (nasalized *k*) has a scattering distribution. It has been found in Athabaskan, Washo (where it is very frequent), Yokuts, and Moquelumnan.

Nasalized vowels occur only in some dialects of Yuki, but there they are abundant. *z* occurs only in Moquelumnan.

f, which is found in several languages near the Columbia river, but is rare elsewhere in America, occurs only in Karok and Esselen.

r has an irregular but continuous distribution and shows considerable difference in pronunciation. It occurs in Yurok, Wishosk, Karok, Chimariko, Shasta, Wintun, Yana, Pomo, and Costanoan, and in Shoshonean. It occurs in Chumash, Salinan, Yokuts, and Moquelumnan in combination with certain consonants (*rk*, *tr*, *cr*), but as it is never found standing alone in these languages, the combinations are more probably only specialized developments of such consonants rather than true unions of separate sounds of which one is *r*.

ð and *ʒ*, usually more or less obscure or impure, occur in a continuous area comprising Maidu, Moquelumnan, Shoshone, Yokuts, and Chumash.

² Below are given three short specimens of texts, one from each of the above phonetic groups.

YUROK

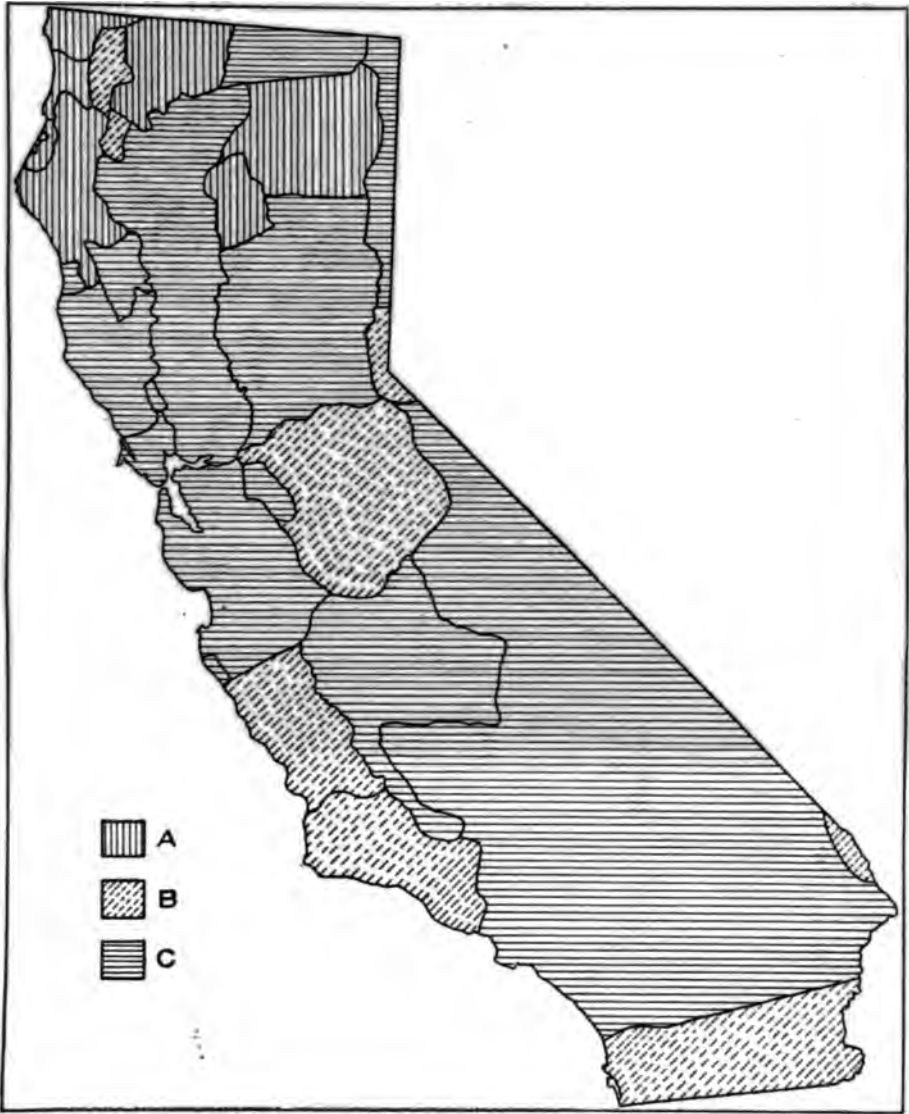
*Tuwii'tme Lhèktsik wà'kLl manukwan'c tsūL ne'g'ec negā'peL hāLtowitkico'-
nawon kiekī'tā me'w tunāLhipu'rqira'w naLqle'l kitsaotā'me' picwii'tme Lhèktsik
alā'lekwo'l.*

MAIDU

*O'nōtōitōikōm ma'idūm amā'm matso'iam sūm'l hu'nkoido ado'm ūyā'kakitsoia,
awe'ten k'laife petsoi'a k'ai'peboswetēn bū'stoia atse'tkan mōkō'lōsim so'ltoia.*

YUMAN (MOHAVE)

*Niny'niyāuk nyiny'mascei'hē'e inowah'itc inyepēk vā vim'o inakrm'a idōlye
nyahakweny'e idaum'o nyāpān āim'o hāpā asim'itc hivatcim'o akyam'o hidōny'e.*



LANGUAGES OF CALIFORNIA. 2—PRONOMINAL INCORPORATION
A, Complete incorporation. *B*, Incomplete incorporation. *C*, No incorporation.

INCORPORATION

As to incorporation of the pronominal elements in the verb, three types may be distinguished: The first is complete and thorough incorporation both of the subject and object pronoun; the resulting form has been so solidified that the separate pronominal elements can no longer be distinguished with certainty or analyzed with any regularity—they have evidently become modified by each other or by contact with other elements in the polysynthetic verb. Eskimo and Iroquois are examples of this extreme type. The second type either is full and regular incorporation,—in which, however, the pronominal elements remain clear and unaltered,—or it is incomplete incorporation, in which case not all of the pronominal elements are included in the verb. Siouan and Nahuatl would belong to this class. The third class lacks incorporation altogether. Lutuami is an example.¹

All three of these types of incorporation occur in Californian languages, furnishing another instance of the diversity that obtains in the linguistic relations of the state.²

To the first type, that of most complete incorporation, belong, first: Athabaskan, Yurok, and Wishosk. These three contiguous languages, it will be remembered, are similar in their phonetic character, as indeed they are in most other features. In addition there are Achomawi, Shasta, and Yana. These six languages occupy a nearly continuous belt stretching across the northern part of the state. Of the six, Yana is the only one that is distinctly soft and smooth phonetically.

The second class, that of less complete incorporation, is irregularly distributed. In the northern part of the state it includes Karok and Chimariko, which are both in contact with the fully incorporating languages. In the south Chumash and Salinan, adjacent languages, belong to this type. Still farther south, Yuman

¹ An occasional reduction of a pronoun to an enclitic, or even to an affix of a verb, does not render the language an incorporative one. These features occur in Lutuami, but Gatschet properly calls the language non-incorporative (*Klamath Indians*, pt. 1, pp. 418, 548). The matter being one of quantitative rather than of qualitative differences, the bulk of cases, or the tendency of the language, must be considered rather than that a few cases be insisted on.

² See Appendix A for examples.

must be reckoned of the same type. In the central portion of the state, Moquelumnan¹ and Washo belong to this class.

The third, or non-incorporative class, includes Klamath, Maidu, Wintu, Yuki, Pomo, Costanoan, Esselen, Yokuts, and Shoshonean.² The territory of this class is continuous.

Plate III shows the occurrence of the three types of incorporation.

Similar in nature to incorporation of subjective and objective pronominal elements in the verb, is incorporation of the possessive pronominal element in the noun. Generally the two features occur, or are lacking, in the same languages. The only exceptions are, on the one hand, Shasta and Achomawi, which are verbally highly incorporative, but have their possessive pronouns detached from the noun;³ and on the other, Shoshonean, which does not seem to be incorporative in its verb, but affixes its possessive pronoun. With these exceptions the distribution of this form of incorporation is identical with that of verbal subjective-objective incorporation.

SYNTACTICAL CASES

Subjective-Objective.—It has been said that the presence of syntactical cases is characteristic of the languages of a large part of California. If the purpose of the subjective and the objective cases

¹ Gatschet (*Amer. Antiq.*, vol. v, pp. 174-175) gives an incorporated form of the subject pronoun only. In northern Moquelumnan, at least, there is unquestionable incorporation of the objective as well as of the subjective pronoun. For instance: *eteya-ni-ma*, see-thee-I; *eteya-ni-ti*, see-thee-we; *eteya-te-s*, seest-me-thou.

² In at least one of the Shoshonean dialects of California pronominal elements are intimately combined with modal or other elements, and the resulting particles affixed to verbs. These particles, however, are frequently affixed to a pronominal stem, or to an adverbial adjunct of the verb instead of to the verb itself. They may even be attached to any word in the sentence. While this is undoubtedly a form of what is called incorporation, somewhat analogous to the constructions found in Selish, it differs considerably from the pronominal incorporation occurring in California, and inasmuch as the pronominal particles are separable from the verb, this condition of structure may be regarded as the equivalent of the absence of incorporation elsewhere in California.

³ It is of some significance that Shasta and Achomawi are non-incorporative as to possessive pronouns. In most respects these languages belong to the central group. They differ from it only in somewhat rougher phonetics, and in a high development of verb-incorporation, which is altogether lacking from the other languages of the group. That, in spite of this verb-incorporation, they are without noun-incorporation, brings them very much closer to the central group.



LANGUAGES OF CALIFORNIA. 3-SYNTACTICAL CASES
A, absent. *B*, present.

be merely to distinguish the subject from the object, it is obvious that one case-ending is sufficient, to whichever of the two nouns it be affixed. In not one of the twenty-two stocks of California are there found both a subjective and an objective case at the same time.

A subjective or nominative is found in three nearly contiguous stocks: Maidu, Achomawi, and Shasta.¹

An objective or accusative case is found more frequently. It occurs in Lutuami, Wintun, Yuki, Costanoan, Moquelumnan, Yokuts, and Shoshonean.

If the occurrence of the two cases be combined, as may justifiably be done, since one is in effect the equivalent of the other, it will be seen that the regions where such a case is found comprise a continuous area covering the entire state, with the following exceptions:

1. An area in the northwest containing six territorially small stocks,² in all but one of which pronominal incorporation occurs.
2. An area in the southwest containing the incorporating Chumash and Salinan stocks.³
3. An area in the extreme south containing Yuman, also incorporative.
4. The detached area occupied by the small Yanan stock, which also incorporates the pronominal elements.
5. Another small isolated area occupied by Washo, which is also to some degree incorporative.

Possessive.—The families that use a possessive case are the same that use a subjective-objective case, with the following excep-

¹ In Maidu this case-ending is an ordinary subjective, being affixed to the subject irrespective of the nature of the verb. In Shasta-Achomawi this case-ending is not used on the subject of an intransitive verb, but is employed only when the verb has an object. This case should therefore properly be called not subjective but agentive, while the unaffixed form of the noun is not really so much an objective as a neutral or absolute case. Examples:

MAIDU (subjective = *-m*)—

mai'düm has sü wö'kan = man did dog hit. (The man hit the dog.)

uni'm süm o'kmaka = this dog will be hungry.

SHASTA (agentive = *-kwa*)—

a' psūkwa kwað' Xwaviḡ dari' tci = dog bit woman. (The dog bit the woman.)

ki' mpiwa a'psü = hungry this dog. (This dog is hungry.)

² Yurok, Wishok, Athabaskan, Karok, Chimariko, and Pomo.

³ Esselen may or may not belong to this area. It is uncertain whether it possessed any syntactical cases.

tions: Pomo and Yana¹ indicate neither subject nor object, but express the possessive relation by a case. On the other hand, Costanoan, which has an objective,² lacks a possessive.

If we consider the occurrence of any syntactical case, irrespective of which one it may be, as compared with the total absence of cases, we find that out of twenty-two stocks in California, twelve or thirteen have at least one such case.³ The remaining languages consist, first, of Yuman and Washo which are both partly extra-Californian; second, of Chumash and Salinan on the southern coast; and, last, of the small compact northwestern group, consisting of Yurok, Wishosk, Athabaskan, Karok, and Chimariko. The distribution of syntactical cases is shown in plates IV and V.

APPOSITIONS

Cases of material as opposed to formal significance, or appositions, or locative and instrumental suffixes, however they may be called, are a prominent feature of Californian languages. It appears that they are absent from only three stocks, namely, the Chumash and Salinan in the southwest — which, in other connections, have previously been mentioned as standing apart from surrounding languages — and the otherwise isolated Yana. These three languages employ, instead of case-suffixes, prepositions, that is, separate words placed before the noun.⁴

¹ Yana, which is otherwise entirely without cases, syntactical or local, forms a possessive in *-k*. Inasmuch as the possessive in northern Maidu is *-ki*, it seems probable that this solitary Yana case is due to Maidu influence. The northern Maidu *-ki* becomes *-k* in the south, and in the extreme south is lost altogether, so that a small portion of the Maidu stock is without a possessive case.

² According to Arroyo de la Cuesta, *op. cit.*

³ In regard to Esselen, as said above, the material extant is too insufficient to allow of a positive determination of the presence or absence of syntactical cases.

⁴ Examples:

YANA

ivu'l wa'wi = in the house.

ki ina = with a stick.

CHUMASH

alapaya ma'm = on the house.

kitca hutcu = like a dog.

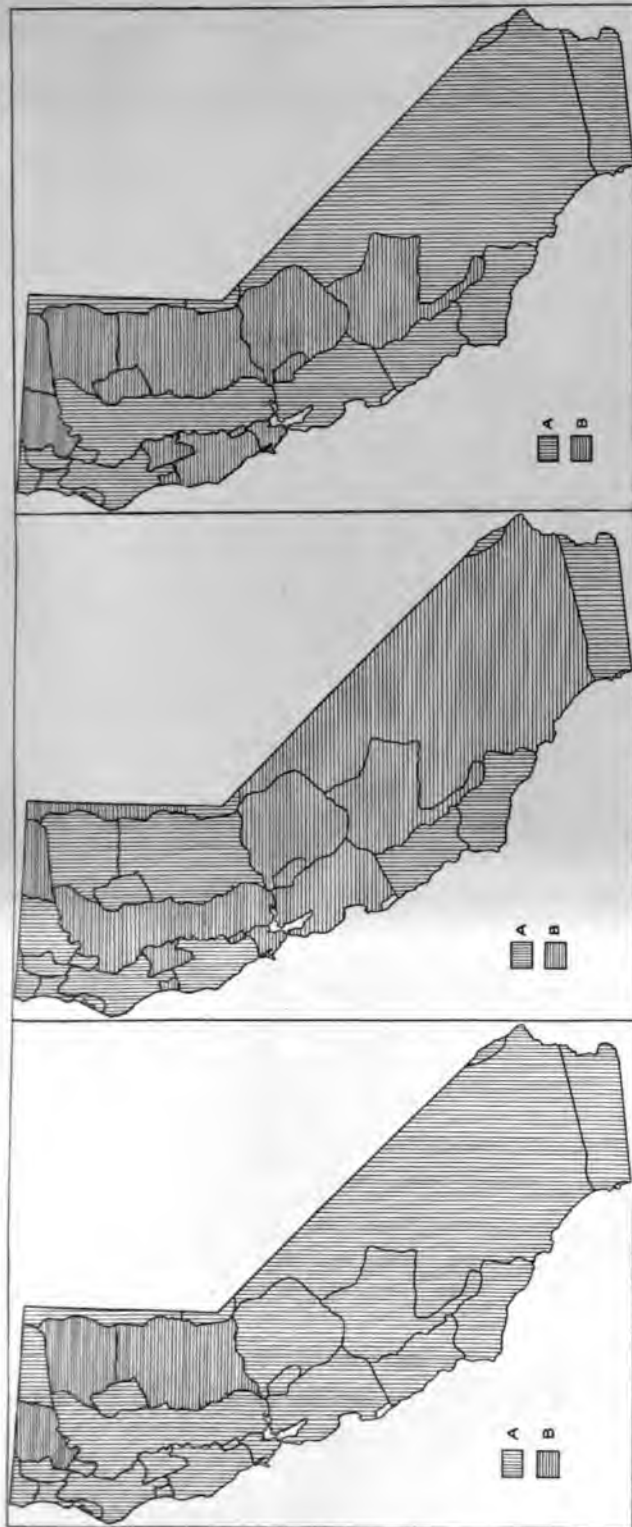
ksunuwu axôp = with a stone.

lülükün matcayac = in the basket.

SALINAN

tâke tecaan = in the basket.

lêmo t'akat = on the mountain.



4. Subjective. (A, absent. B, present.)

5. Objective. (A, absent. B, present.)

6. Possessive. (A, absent. B, present.)

LANGUAGES OF CALIFORNIA—SYNTACTICAL CASES (SEPARATELY)

1

2

3

4

The range of ideas expressed by these appositions is quite wide. An instrumental is almost universal. Locatives, of course, make up the majority of the suffixes. Besides a general locative some of the most frequently occurring are inessive, superessive, introessive, ablative, and terminative. Besides these, comitatives, similatives, partitives, and suffixes expressing similar ideas, are found.¹

In the northwestern (Hupa-Yurok) region this feature seems to be less developed than elsewhere. The distribution of appositions is shown in plate VI.

PLURAL AND REDUPLICATION

On the whole, the existence of a plural in nouns is not a common feature of Californian languages. Roughly, the absence of a plural is characteristic of the northern part of the state. North of the latitude of San Francisco, Lutuami has a reduplicating distributive, Washo a curious final reduplication, probably distributive rather than plural; and Yuki a not very prominent plural. All the remaining languages are without a plural. South of this latitude, however, the reverse is the case. Besides Yuman, which in this respect as in most others stands isolated, Yokuts is the only language of this part of the state that has neither a well-marked plural nor a distributive. The occurrence of a plural is shown in plate VII.

Several of the languages that have been given as lacking a plural show plural forms for a very few substantives, mostly words denoting human beings. Thus, in Maidu the words for woman, husband, child, and dog have been found to have a plural, but only these.² Of course a few sporadic occurrences of this sort do not give the language a plural. There seems to be a tendency in languages the world over to give to words denoting human beings a plural more frequently than to other words. Conversely, inanimate nouns are often excepted where there is a plural.

Reduplication of nouns to indicate a plural, distributive, or col-

¹ See Appendix 3 for comparative table of syntactical cases and appositions.

² Similarly in Yokuts only words denoting human beings, and in Karok a few terms of relationship, have as yet been found to show a plural. The few Maidu terms possessing a plural also have a dual. The affixes used to express this dual and plural are the same that are used to indicate them in pronouns and demonstratives.

lective is generally absent from Californian languages.¹ It is found in Shoshonean, Washo, and Lutuami, but the only purely Californian language that shows it is Chumash, which is in contact with Shoshonean.² Reduplication is a very important feature in Selish, and of more northern languages of the Pacific coast (Wakashan and Tsimshian); in Klamath, which is adjacent to Shoshonean; in Piman and Aztecan, which are thought to be related to Shoshonean, and in other Mexican languages. There is thus a long and nearly continuous area from southern Alaska to southern Mexico, along the watershed of the continent, in which this feature occurs, while in the greater part of the continent to the east it is rare. This belt of reduplication virtually surrounds California, but has practically not affected it. The absence of reduplication is a characteristic of California.

MINOR FEATURES

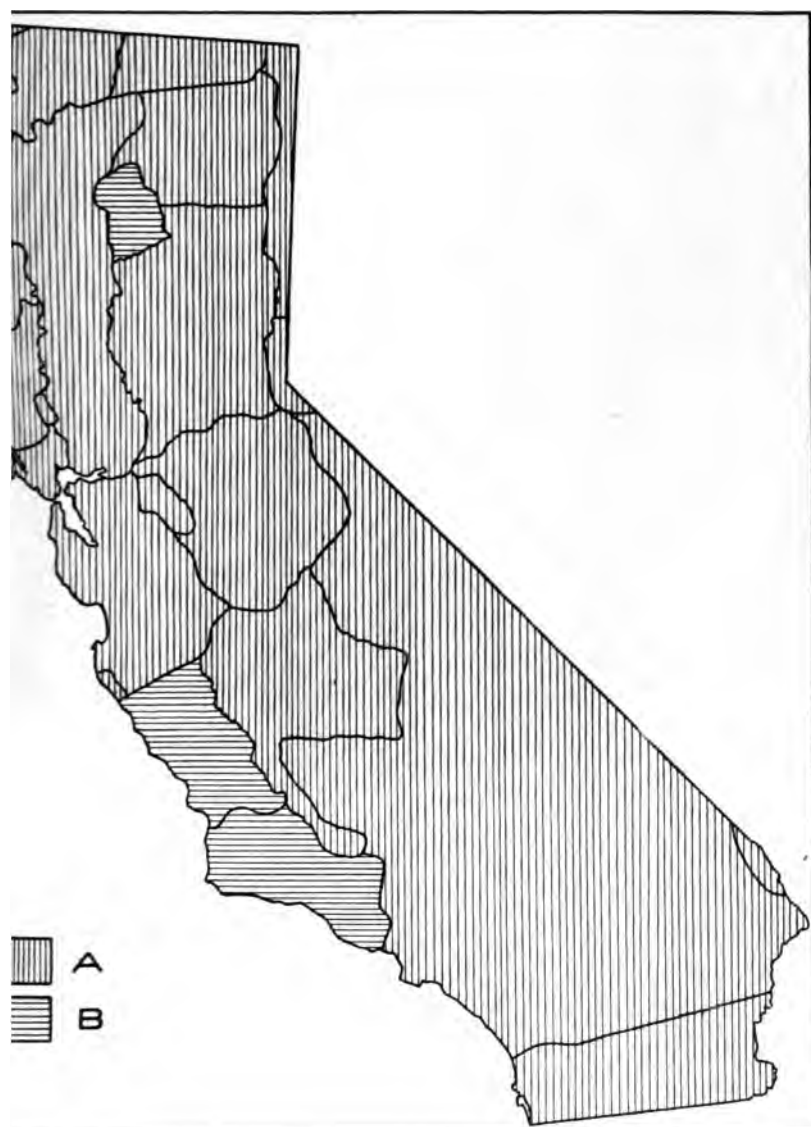
There are a number of features which occur too rarely in Californian languages or have not enough bearing on the general structure of a language to be of much consequence in a classification, but which present points of interest that warrant their brief consideration.

Dual. — A few Californian languages show a dual in the pronoun. These are the contiguous Maidu, Washo, and Wintun in the north, and the contiguous Yokuts and Chumash in the south. The existence of a dual in the pronoun is apparently not causally connected with the existence of a plural in the noun, for Maidu and Yokuts possess a pronominal dual but lack a plural in nouns, while

¹ Only a substantival reduplication is referred to. There is scarcely a language in America, except Eskimo, in which reduplication of the verb, usually to express iteration or a similar idea, does not occur. Nouns which in their normal form are duplicated (Karak: *nekic-nekic*, hog; Maidu: *qasqasi*, blue-jay) are found in many Californian languages, but of course are not instances of formal reduplication. Very often the duplication seems to be onomatopoeic. Adjectives are also often found duplicated in their normal form (Achomawi: *stsats'stsatsilji*, rough; *djaidjaiudji*, elastic). Such duplication, of course, occurs outside of California, as for instance in Chinook.

² Maidu shows a few cases of distributive reduplication, analogous to its scattering plurals. Examples:

<i>sewi</i> , river.	<i>seuseuto</i> , rivers, every river.
<i>tsa</i> , tree.	<i>tsatsato</i> , trees, every tree.
<i>yamani</i> , mountain.	<i>yamanmanto</i> , mountains, every mountain.
<i>sü</i> , dog.	<i>süsüto</i> , dogs, every dog.



LANGUAGES OF CALIFORNIA. 7—APPOSITIONS

i, present. *B* absent.



LANGUAGES OF CALIFORNIA. 8—PLURAL
A, absent. B, present.

Salinan and Yuki, which have a plural, lack the pronominal dual altogether, so far as is known.¹

Gender.—The distinction of sex in the pronoun is a feature that marks certain languages of Oregon and the coast to the north (Chinook, Kalapuya, Selish). It is found nowhere in California except among the Pomo.²

Sex Differences.—Yana shows a remarkable difference in the words used by men and women.³ No other language in California possesses this feature,⁴ which thus becomes another piece of evidence illustrating the isolation of Yana.

Demonstratives.—Some of the languages of the state have two demonstratives, some three. Nowhere is there any evidence of a high development and consequent syntactical use of the demonstratives such as occurs in Kwakiutl and to a less extent in other languages of the north Pacific coast.

¹ It would seem that the presence of the dual is in some way connected with a tendency to systematize the personal pronouns. In all the languages where it occurs the three persons of the pronoun are similar in form, and the dual and plural are formed regularly. Examples (the Yokuts forms given being possessives) :

		MAIDU	WINTUN	YOKUTS	CHUMASH
Singular	{ 1	<i>ni</i>	<i>ni</i>	<i>nim</i>	<i>k</i>
	{ 2	<i>mi</i>	<i>mi</i>	<i>min</i>	<i>p</i>
	{ 3	<i>mom</i>	<i>pi</i>	<i>amin</i>	<i>s</i>
Dual	{ 1	<i>nisam</i>	<i>nel</i>	<i>nimgin</i>	<i>kis</i>
	{ 2	<i>mimam</i>	<i>mel</i>	<i>mingin</i>	<i>pis</i>
	{ 3	<i>mosam</i>	<i>pel</i>	<i>amingin</i>	<i>sis</i>
Plural	{ 1	<i>nisem</i>	<i>nile</i>	<i>nimâk</i>	<i>ki</i>
	{ 2	<i>mimem</i>	<i>mile</i>	<i>minâk</i>	<i>pi</i>
	{ 3	<i>mōsem</i>	<i>pile</i>	<i>amnâk</i>	<i>si</i>

² Pomo, Kulanapo dialect : he, *mip* ; she, *mit* ; him, *mibal* ; her, *miral*.

³ Examples :

MALE SPEAKING :

miltčsindja, I am running.

halisiwâ'ma, I am whipping you.

ni'tusasindja, I am going away.

yâ'na, Indian.

mari'mi, woman.

a'una, fire.

ina, a stick.

FEMALE SPEAKING :

miltčsi'ndj.

halisiwâ'm.

âtusasindj.

ya.

mari'm.

au.

i.

⁴ Terms of relationship among many California tribes are different for men and for women speaking, as is the case throughout America and in other continents. This distinction is evidently made so frequently by primitive peoples because the relationship itself is to them different as the sex is different ; whereas the distinction in Yana is a linguistic one.

LEXICAL SIMILARITIES

It happens in California, as elsewhere, that occasionally two neighboring but unrelated languages have a few words in common, owing presumably to borrowing of one from the other. Such loan-words, however, are not frequent nor widespread enough to call for special attention. The words for 'dog' are an exception. These, in at least a dozen Californian stocks, are so similar that there can be no question that they are only variant forms of one common word.¹

The roots for 'food' or 'eat' also show considerable similarity in a number of languages.² In several languages the word for 'salmon' is derived from the root for 'eat' or 'food.'³ These languages, excepting one, the Yuki, are all in the northwestern part of the state, where salmon was more distinctly the staple food than elsewhere. Similar identities in derivation and composition of words may probably be expected in other cases between stocks whose lexical elements themselves are distinct.

The pronominal roots of the first and second persons of Californian languages show many similarities. As regards the first person, nine of the twenty-two stocks have *n* as the primary element of the pronoun and four others have *k*. As regards the pronoun of the second person, *m* is the root of eighteen of the

¹ Similar words for dog are: Yurok, *tsic*; Chimariko, *sitcela*; Wintun, *tcutcu*, *sukut*, *suku*; Yana, *cuc*, *cucu*; Maidu, *sü*, *suku*; Washo, *suku* (*-gucu* in composition); Moquelumnan, *tcuku*; Costanoan, *wutcu*, *matcan*; Salinan, *otco*; Chumash, *hulcu* (*-go* in composition); Yokuts, *teecec* (*pus* in another dialect). Shoshonean *saridj* (Ute), and Nahuatl *tcitci* (*chichi*) may be the same word.

² Similar roots for eat are: Salinan, *lam*; Esselen, *am*; Costanoan, *am*; Moquelumnan (Chumteya), *ua*, (Talatui) *tcam*; Wintun, *ba*; Yuki, *ha^w*; Chimariko, *ham*, *yem*; Achomawi (Hat Creek), *am*; Karok, *am*; Washo, *emlu*.

	Eat, food	Salmon
³ Yuki,	<i>ha^wwaii</i> ,	<i>ha^wwe</i> .
Yurok,	<i>nep</i> ,	<i>nepui</i> .
Karok,	<i>am</i> ,	<i>ama</i> .
Wishosh,	<i>watla</i> , <i>ptla</i> ,	<i>matlak</i> .
Shasta,	<i>kitsku</i> ,	<i>kitar</i> .
Chimariko,	<i>hameu</i> , <i>yemax</i> ,	<i>umul</i> .

stocks.¹ These correspondences seem very remarkable. The phenomenon, however, is not specifically Californian, for it has been noted that the majority of American languages have either *n* or *m* or both for the roots of their pronouns.

CLASSIFICATION²

In combining a consideration of the structural features that have been separately discussed, in order to form a classification of the languages of the state, Yuman must be omitted. This language, which belongs only in very small part to California, shows very little resemblance to any language in the state. It is true that Shoshonean and Athabascan are also very widely spread extra-Californian stocks, but they are both in contact, territorially, with a large number (seven or eight) of distinctly Californian languages, while Yuman is detached from all of them, being contiguous, within the state, only with Shoshonean. On *a priori* grounds Yuman might therefore be expected to have little in common with the mass of Californian languages, and inasmuch as this is the case, it may be omitted from the present consideration.

The remaining twenty-one linguistic stocks of the state seem to fall into the three groups that have been previously indicated.

The southwestern group comprises Chumash and Salinan. No other languages can be positively assigned to it. Yokuts is distinctively of the Maidu type, and the same is true of Costanoan and probably of Esselen. Moquelumnan shows resemblance to this group in some points, but is geographically isolated from it; moreover, it has at least as much affinity with Maidu. This group must therefore be considered to consist of only two languages. Chumash may be taken as the type.

	Yurok.	Karok.	Wishok.	Chimariko.	Shasta.	Achomawi.	Yana.	Maidu.	Wintun.	Washo.	Yuki.	Pomo.	Moquelumnan.	Costanoan.	Esselen.	Salinan.	Chumash.	Yokuts.	Lutuami.	Shoshoni.	Yuman.	Athabascan.
1st pers.	nek	n	yil	n	yepo	itu	dja	n	n	l	h,w	k	k	k	n	k	k	n	n	n	n	s,x
2d pers.	qel	m	kil	m	mamu	mimu	ma	m	m	m	m	m	m	m	m	m	m	m	m	m	m	n

The Shasta, Achomawi, and Yana forms are possessives, the Lutuami objective. The pronoun of the first person in Yuki is *a^hp*, *ii*, and *iii*. In Chumash it is *k* in composition and *noi* when independent. In Yuman it is either vocally lacking or expressed by *ny*.

¹ See plate II.

² AM. ANTH., N. S., 5—2.

The northwestern group occupies the northwestern corner of the state. Its territory is about as confined¹ as that of the southern group, but the number of stocks comprised in it is larger, being five. These are the closely similar Yurok and Wishosk; with Athabaskan; Karok; and Chimariko. Karok and Chimariko show the type of the class less clearly than the other members of the group. For convenience Yurok may be taken as the type of this group.

The central group with its subdivisions includes all the remaining languages except Yana and perhaps Washo, and is therefore most characteristic of the state as a whole. Maidu is an excellent type of this group. In the north, Shasta and Achomawi, on account of more involved phonetics and verbal incorporation, must be regarded as forming a somewhat distinct subgroup. In the south, Moquelumnan, on account of the presence of incorporation and other features, must be regarded for the present as showing another subtype.¹ The languages of the central group accordingly are Maidu, Lutuami, Wintun, Yuki, Pomo, Costanoan, Esselen, Yokuts, Shoshonean; and, less distinctively, Shasta, Achomawi, Moquelumnan, and possibly Washo.

Yana shows so few similarities to other languages that it cannot be included in any group.

The characteristics of the three groups are as follows:

Southwestern or Chumash type: Pronominal incorporation, well developed plural, lack of syntactical cases, use of prepositions instead of case-appositions, and a not very simple phonetic system.

Northwestern or Yurok type: Systematic pronominal incorporation, total lack of a plural, lack of syntactical cases, presence of material cases, and phonetics that are more or less rough and involved.

Central or Maidu type: Absence of pronominal incorporation, an undeveloped plural, syntactical cases, material cases, and distinct, simple, and soft phonetics.

It will be noted that the great Athabaskan family has been included in one group of minor Californian languages, and similarly

¹ The position of Moquelumnan must be left somewhat uncertain because it is as yet undetermined whether this language and Costanoan form one stock or two. If they should prove to be genetically related, the combined Mutsun family, on account of the decided similarity of Costanoan to the Maidu type added to the partial resemblance of Moquelumnan, would unquestionably fall into the central group.

Shoshonean with another. It should not be assumed that the languages of the northwestern group have all acquired their characteristics through the influence of Athabascan. There has possibly been considerable influence exerted by Athabascan on the contiguous languages of the northwestern part of the state, but it is equally probable that these languages have affected the branch of Athabascan with which they have been in contact. It is not yet known how far Hupa and other Californian Athabascan dialects are modified from the Athabascan of other parts of America, nor whether the modifications are in the direction of characteristics possessed by the other languages of northwestern California. Analogously with Shoshonean in its contact with Maidu and other Californian languages.

It must also be borne in mind that the classification given has been made only for California. Shoshonean, for instance, may have much closer affinities with a group of languages elsewhere; it is asserted only that in so far as Shoshonean is a Californian language, and in so far as it has similarities with Californian languages, it belongs to the Maidu class. The question of whether its Californian or its Mexican structural correspondences are greater has of course not been touched upon, even by implication.

A third inference that must not be made is, that if any language elsewhere be similar to either of these two great stocks, Athabascan or Shoshonean, it is therefore similar to the corresponding group of Californian languages. Thus Kootenay (Kitunáha) has been declared to be structurally much like Shoshonean;¹ but it does not follow that it is at all like Maidu or Wintun. Different principles of comparison and classification may have been used in comparing Shoshonean with Kootenay and in comparing Shoshonean with Californian languages. In the present systematization for California, pronominal incorporation and syntactical cases and similar characteristics have been made the basis of classification; for other parts of North America other features, such as nominal incorporation and reduplication and monosyllabic structure, might be the important ones to consider. The mere fact that any extra-Californian language is similar to either Shoshonean or Athabascan, does not, then, by any

¹ A. F. Chamberlain in *Report B. A. A. S.*, 1892, p. 589.

means, make it necessary that it is similar to any group of Californian languages.

Comparisons between the languages of California, as a whole, and those of any neighboring area, can be made only in one direction. To the west is the ocean, and to the south and east there extend, for long distances, only the Yuman and Shoshonean (including the perhaps related Piman) stocks, above discussed. To the north, however, the linguistic diversity of California is continued into Oregon, and here, wherever there is material, comparisons may be made.

Of the eleven linguistic stocks of Oregon, three — Athabaskan, Lutuami, and Shoshonean — occur in California and have already been considered. Of two others, Takilman and Kusan, both in the southern part of the state, nothing whatever is known morphologically. This leaves six stocks more or less available for comparison: Sahaptin, Chinook, Kalapuyan, Yakonan, Waiilatpuan, and Selish. Sahaptin,¹ as has been said, is morphologically similar to Lutuami and Maidu, and therefore bears resemblance to the central group of California. It is not contiguous to Lutuami nor to Maidu, but is connected with them by an intervening area of Shoshonean. Chinook² is of a very different type. It is characterized by thorough incorporation, lack of cases, an article important in the sentence structure, pronominal sex-gender, and a very rough phonetic system. Kalapuyan³ shows several similar features. Yakonan also appears to belong to the same general type.⁴ Waiilatpuan, according to scanty material collected by one of the authors, appears to be morphologically intermediate between Chinook and Sahaptin, but to incline probably to the Chinook type. Selish,⁵ finally, is also unlike the Californian languages. Its specialized and difficult phonetics, high development of reduplication and its substantial suffixes do not occur in California. It therefore appears that, beyond Sahaptin, no languages outside of California belong to any of

¹ *Trans. Am. Eth. Soc.*, vol. II. Pandosy (Shea, *Library Am. Ling.*, vol. VI). Hale in *U. S. Expl. Exped.*, vol. VII.

² Boas in *Am. Anth.*, 1893, vol. VI, pp. 55-65. Swanton in *Am. Anth.* (N. S.), 1900, vol. II, pp. 199-238.

³ Hale, op. cit., vol. VII, p. 564. Gatschet in *Mag. Am. Hist.*, vol. I, p. 167.

⁴ According to the information of Dr Livingston Farrand.

⁵ Boas in *Rep. B. A. A. S.*, 1890, pp. 679-688. Mengarini, *Gram. Ling. Sal.* (Shea, *Library Am. Ling.*, vol. II).

the groups that have been established in California, unless the two as yet unknown languages of the coast of southern Oregon — Takilman and Kusan — should prove to have similarities.

It is interesting to note that the linguistic classification that has been made is corroborated to a considerable extent by differences of culture in the several groups in question. The small group of five stocks in northwestern California, constituting a well-marked linguistic type, are distinct in culture also. All the tribes of this region possess a specialized culture which differs from that of the rest of the state in the development of art, the extensive use of canoes, the importance of salmon as a food, in the strong development which ideas of property have exerted on social conditions, and the character of their ceremonies and of their myths.

The central group, on the other hand, though showing more variation in culture, is nevertheless quite clearly distinguished by the general absence of the canoe, the great dependence on the acorn for food, the extreme development of the use of feathers for ceremonial and other purposes, by the myths, and by ceremonial organizations such as the Secret Society of the Maidu. The widespread custom of cremation and of the annual ceremony of the "Burning" for the dead are also characteristic of this group.

The southwestern group is too little known to warrant much reliance on any cultural corroboration of linguistic groupings. It would seem, however, that it possessed several distinguishing features, such as rather remarkable development of the canoe, considerable dependence on fish for food, and perhaps a rather special type of art, particularly in carving.

It seems, therefore, that cultural groupings coincide more or less with linguistic grouping.

A principle that appears prominently in the facts that have been presented is that of territorial continuity of characteristics. A feature is rarely found in only one language. When it does occur in several stocks, as is usually the case, these are not scattered at random and more or less detached from each other, but generally form a continuous or nearly continuous area, however irregular its outline may be. This principle applies as well to types of languages as to single characteristics.

The principle of territorial continuity of types, however, shows an exception. In southern central California, Yokuts and Moquelumnan occupy positions such that, if they were interchanged, the continuity of type would be greater. Yokuts linguistically belongs clearly to the Maidu type; while Moquelumnan, which separates it geographically from Maidu, shows certain resemblances to Chumash and Salinan, with which Yokuts is in contact. In addition, Yokuts is divided; a fragment of the stock lies north of the main body, nearly in contact with the Maidu. Moquelumnan is also divided territorially, the smaller portion of the stock occupying a detached area on the coast immediately north of San Francisco. The uncertainty of the relationship between Moquelumnan and Costanoan makes the situation more complicated. It seems to be also generally assumed that the Shoshoneans are comparative newcomers in the state and have pressed upon the southern and eastern flank of the Yokuts. Altogether it is evident that there has been some shifting of population in the part of the state about San Joaquin valley.

In the north, territorial continuity is not interrupted, but Yana forms an isolated islet, so to speak, having virtually no linguistic resemblances with its neighbors. In fact, it is not known to have affiliations anywhere.

If the scattering indications of movements be compared, it is found that the latter have been generally in a north and south line, parallel to the coast. Yokuts has affinities to the north, and its two fragments lie in a north and south line. The Yuki territory consists of three areas, one south of the others. The Athabascans are distributed in a north and south direction. Yana and Moquelumnan do not present decided indications of movement in any direction. So far as there is evidence, accordingly, it points to a general north and south direction for the movements within the state.

Such movements of stocks, however, become rather inconspicuous if we regard the state as a whole, and the relative stability of population as opposed to the instability in the central portions of the continent is a noteworthy feature. That territorial stability and not instability should, on the whole, be characteristic of the tribes of California is only natural from the fact that they fall into a few compact and continuous groups.

APPENDIX A.

HUPA (ATHABASCAN) OBJECTIVE CONJUGATION.

nuxtsis = I saw thee.

Singular.

Subj.	Obj.	me.	thee.	him.
Sing.	I thou he	<i>xwiLtsis</i> <i>tcuxwiLtsis</i>	<i>nuxtsis</i> <i>tcuxniLtsis</i>	<i>xuxtsis</i> <i>xuxtsis</i> <i>tcexoLtsis</i>
Plural.	we ye they	<i>noxwoLtsis</i> <i>yaxwiLtsis</i>	<i>nidiLtsis</i> <i>yaxwiLtsis</i>	<i>yaxodiLtsis</i> <i>noxdoLtsis</i> <i>yaoxoLtsis</i>

Plural.

Subj.	Obj.	us.	ye.	them.
Sing.	I thou he	<i>noxoLtsis</i> <i>noxteiLtsis</i>	<i>nuxuxtsis</i> <i>nuxteiLtsis</i>	<i>yaxuxtsis</i> <i>yaxuxtsis</i> <i>yaoxoLtsis</i>
Plural.	we ye they	<i>noxwoLtsis</i> ?	<i>noxodiLtsis</i> ?	<i>yaxodiLtsis</i> <i>xwoLtsis</i> <i>yanLiLtsis</i>

ACHOMAWI OBJECTIVE CONJUGATION (SINGULAR).

qāl = strike.

Subj.	Obj.	me.	thee.	him.
I thou he		<i>sketoQali</i> <i>sitoQalma</i>	<i>l^EhetoQalitskE</i> <i>kitoQalitskE</i>	<i>setoQali</i> <i>ketoQali</i>

MOQUELUMNAN OBJECTIVE CONJUGATION (SINGULAR).

eteya = see.

Subj.	Obj.	me.	thee.	him.
I thou he		<i>eteyates (iga)</i> <i>eteyatewō</i>	<i>eteyanima</i> <i>eteyani</i>	<i>eteyakōma</i> <i>eteyanis (ikazōi)</i>

CHUMASH OBJECTIVE CONJUGATION (SINGULAR).

iniwe = kill.

Subj.	Obj.	me.	thee.	him.
I			<i>k-iniwe-l-in</i>	<i>k-iniwe</i>
thou		<i>p-iniwe-l-it</i>		<i>p-iniwe</i>
he		<i>s-iniwe-l-it</i>	<i>s-iniwe-l-in</i>	<i>s-iniwe</i>

YUKI OBJECTIVE CONJUGATION (SINGULAR).

na^awiwi = saw.

Subj.	Obj.	me.	thee.	him.
I			<i>a^ap mis na^awiwi¹</i>	<i>a^ap na^awiwi</i>
thou		<i>mi ii na^awiwi</i>		<i>mi na^awiwi</i>
he		<i>ii na^awiwi</i>	<i>mis na^awiwi</i>	<i>na^awiwi</i>

YOKUTS OBJECTIVE CONJUGATION (SINGULAR).

cilhin = saw.

Subj.	Obj.	me.	thee.	him.
I			<i>cilhin namam</i>	<i>cilhin na</i>
thou		<i>cilhin manan</i>		<i>cilhin ma</i>
he		<i>cilhin nan</i>	<i>cilhin mam</i>	<i>cilhin</i>

MAIDU OBJECTIVE CONJUGATION.

yok = strike.

Singular.

Subj.	Obj.	me.	thee.	him.
Sing.	I		<i>ni hai min yokon</i>	<i>nihai moye yokon</i>
	thou	[<i>kon</i> <i>mi hano nik yo-</i>		<i>mi hano moye yokon</i>
	he	<i>mom a nik yokon</i>	<i>mom a min yokon</i>	<i>mom a moye yokon</i>
Dual.	we 2	[<i>yokon</i> <i>nisamaias min yokon</i>	<i>nisamaias moye yokon</i>	
	ye 2	<i>mimamaiamo nik</i>		<i>mimamaiam moye yokon</i>
	they 2	<i>mosami nik yokon</i>	<i>mosami min yokon</i>	<i>mosami moye yokon</i>
Plural.	we	[<i>yokon</i> <i>nisemaies min yokon</i>	<i>nisemaies moye yokon</i>	
	ye	<i>mimemaie mo nik</i>		<i>mimemaie mo moye yokon</i>
	they	<i>mopami nik yokon</i>	<i>mopami min kokon</i>	<i>mopami moye yokon</i>

¹ *a^ap mis* is also contracted to one word, *amis*.

MAIDU OBJECTIVE CONJUGATION. — *Continued.**yok* = strike.

Dual.

Subj.	Obj.	us 2.	ye 2.	them 2.
Sing.	I		<i>ni hai mima yokon</i>	<i>ni hai mosa yokon</i>
	thou	<i>mi hano nisa yokon</i>		<i>mi hano mosa yokon</i>
	he	<i>mom a nisa yokon</i>	<i>mom a mima yokon</i>	<i>mom a mosa yokon</i>
Dual.	we 2		<i>nisamaias mima yokon</i>	<i>nisamaias mosa yokon</i>
	ye 2	<i>mimamaiamo nisa yokon</i>		<i>mimamaiamo mosa yokon</i>
	they 2	<i>mosami nisa yokon</i>	<i>mosami mima yokon</i>	<i>mosami mosa yokon</i>
Plural.	we		<i>nisemaies mima yokon</i>	<i>nisemaies mosa yokon</i>
	ye	<i>mimem aiemo nisa yokon</i>		<i>mimemaieemo mosa yokon</i>
	they	<i>mopami nisa yokon</i>	<i>mopami mima yokon</i>	<i>mopami mosa yokon</i>

Plural.

Subj.	Obj.	us.	ye.	them.
Sing.	I		<i>ni hai mime yokon</i>	<i>ni hai mopa yokon</i>
	thou	<i>mi hano nise yokon</i>		<i>mi hano mopa yokon</i>
	he	<i>mom a nise yokon</i>	<i>mom a mime yokon</i>	<i>mom a mopa yokon</i>
Dual.	we 2		<i>nisamaias mime yokon</i>	<i>nisemaias mopa yokon</i>
	ye 2	<i>mimamaiamo nise yokon</i>		<i>mimamaiamo mopa yokon</i>
	they 2	<i>mosami nise yokon</i>	<i>mosami mime yokon</i>	<i>mosami mopa yokon</i>
Plural.	we		<i>nisemaies mime yokon</i>	<i>nisemaies mopa yokon</i>
	ye	<i>mimemaieemo nise yokon</i>		<i>mimemaieemo mopa yokon</i>
	they	<i>mopami nise yokon</i>	<i>mopami mime yokon</i>	<i>mopami mopa yokon</i>

APPENDIX B.
COMPARATIVE LIST OF SYNTACTICAL CASES AND APPPOSITIONS.¹

	Yurok.	Karok.	Wishosk.	Chimariko.	Shasta.	Achomawi.	Yana.	Maidu.	Wintun.	Wasbo.	Yuki.	Pomo. ²	Moquehummam.	Costanoan. ³	Kaselen.	Sallman.	Chumash.	Yokuts.	Lutuanmi. ⁴
Agentive					<i>-kwa</i>														
Subjective					<i>-kwa</i>														
Objective					<i>-to</i>				<i>-m</i>		<i>-a</i>		<i>i(?)</i>					<i>-a</i>	
Possessive					<i>-to</i>	<i>-wa</i>	<i>(-k)</i>	<i>-k, ki</i>			<i>-at</i>	<i>-ibax</i>	<i>ng. xō</i>					<i>-m</i>	
Locative	<i>-l</i>	<i>-k</i>	<i>-k</i>		<i>-tok</i>	<i>-ddt</i>		<i>-di</i>			<i>op</i>		<i>-ato</i>	<i>-ta</i>				<i>-u</i>	<i>-xeni</i>
Ablative					<i>-np</i>	<i>-np</i>		<i>-na</i>		<i>-aci</i>	<i>sid</i>		<i>-mo</i>	<i>-ak</i>				<i>-nit</i>	
Terminalis					<i>-np</i>			<i>-nak</i>		<i>-b</i>	<i>-kil</i>			<i>-ak</i>					
Introgressive																			
Superessive		<i>-mini</i>										<i>-wina</i>							
Subessive		<i>-afšok</i>										<i>-yo</i>	<i>-am</i>						
Inessive		<i>-kru</i>						<i>-di</i>	<i>(-el)</i> ⁵	<i>-a, -aca</i>	<i>-i</i>	<i>-u, -xam</i>							
Antecessive												<i>-xowa</i>							
Postessive												<i>-nauwa</i>							
Juxtapositive					<i>-pr</i>					<i>-dutil</i>		<i>-kate</i>							
Comitative					<i>-la</i>					<i>-haka</i>									
Instrumentalis	<i>-meL</i>	<i>-muk</i>		<i>-mdi</i>	<i>-la</i>	<i>-a</i>		<i>-kan</i>	<i>-ing</i>	<i>-lu</i>	<i>-ook</i>	<i>-i, -yai</i>	<i>-kōta</i>	<i>-eyum</i>	<i>-manu</i>		<i>-ni, -ang</i>		
Simulative					<i>-xa</i>			<i>-ni</i>					<i>-pasō</i>		<i>-nu</i>				

¹ In this table only a single language from each stock is represented. A dash denotes evidence of the absence of the case or apposition in question. A blank indicates that no form has as yet been found, but that the possibility of its existence is not precluded.

² May also be used before a noun.

³ Kulnapo language.

⁴ Rumsien language.

⁵ From Gatschet, "Grammar of the Klamath Language," *Cont. N. A. Eth.*, vol. II, pt. I.

⁶ Also *-kri*.

⁷ Also *-fala*.

SHEET-COPPER FROM THE MOUNDS IS NOT NECESSARILY OF EUROPEAN ORIGIN¹

By CLARENCE B. MOORE

(WITH DISCUSSION BY J. D. MCGUIRE, F. W. PUTNAM,
AND GEORGE A. DORSEY)

INTRODUCTION

Some years ago I included in the Second Part of my "Certain Sand Mounds of the St. Johns river, Florida," which appeared in the *Journal of the Academy of Natural Sciences of Philadelphia*, a paper on objects of copper found in aboriginal mounds. In this paper, where the matter is gone into much more fully than I have space to devote to it here, it was shown by many analyses that much of the copper of the mounds, including sheet-copper, was native copper, and much purer than copper which is recovered from ores by smelting and especially from the arsenical, sulphide ores of Europe, which, treated by the earlier smelting processes, produced a very impure article indeed. From this, then, it was evident that objects made from this pure copper were made by the aborigines from native copper, and not from copper furnished by the whites, since, as we have said, all European copper obtained by smelting was very impure and in Europe there is no supply of native copper sufficient for commercial purposes.

In view of this, the conclusion that the aborigines were making and using objects of copper, including sheet-copper, before the coming of the whites, seemed hard to avoid, and, in point of fact, it was almost universally accepted. Of the two persons who, in pri-

¹ This paper (which was read before a meeting of Section H of the American Association for the Advancement of Science, held at Washington, December 30, 1902) has been submitted to Dr H. F. Keller, Professor of Chemistry at the Central High School, Philadelphia, and long a specialist in analyses of copper, who writes that he has "not been able to detect any statement in regard to either composition or extraction of copper which would seem to require revision or correction." Prof. James Douglas, the authority on copper, President of the Copper Queen Mining Co. of Arizona, writes, "I have read with interest your paper, and thoroughly agree with all you say."

vate letters, wrote in opposition to the conclusion arrived at, one frankly admitted his inability to draw conclusions from analyses, while the other, by stating that copper ore and native copper were practically the same because the difference between them was only a chemical one, indicated a lack of ability to form intelligent opposition.

The matter of the pre-Columbian use of copper, including sheet-copper, would have been considered as settled without further discussion had it not been that Mr J. D. McGuire, in his interesting and exhaustive memoir, "Pipes and Smoking Customs of the American Aborigines" (page 523 *et al.*),¹ seemed to regard copper in use among the aborigines to be necessarily of European provenance. This opinion, in a publication under government auspices, may be considered to reopen the question, especially as Mr McGuire (page 479), in quoting some of my reports on southern mounds, inadvertently makes it appear that copper met with by me was found under circumstances indicating its provenance from European sources.

Mr McGuire says :

"Mr Clarence B. Moore found at Fairview, Camden county, Georgia, a foot below the surface in a mound, a deposit of calcined human bones beneath a local layer of oyster shells, and associated with the bones was a sheet-copper ornament with *repoussé* decorations.² He refers also to four rings found on the finger of a skeleton at Madisonville, Ohio, by Professor Putnam, which were made from bands of sheet-copper. Besides finding a copper finger-ring in a mound near Woodbine, Georgia, and also a portion of a disc of copper in a mound in McIntosh county, Georgia, which was carbonated through, Mr Moore also found an eight-inch copper celt in a mound north of Creighton island, Georgia.³

"Such objects are said to be usually found near the surface, and polychrome and other glass beads were found in the mounds at a depth of two feet with human remains on or near the surface."⁴

I shall now explain more fully the cases cited by Mr McGuire.

¹ *Report of the U. S. National Museum for 1897.*

² Certain Aboriginal Mounds of the Georgia Coast, *Journal of the Academy of Natural Sciences of Philadelphia*, XI, p. 10, 1897.

³ *Idem*, pp. 13, 14, 25, 41, Philadelphia, 1897.

⁴ *Idem*, pp. 14, 23, 66, Philadelphia, 1897.

The mound at Fairview, where sheet-copper was found one foot below the surface, was but two feet eight inches high. No object distinctly of European manufacture was present in this mound.

The mound at Woodbine was four feet nine inches high. With the exception of buttons with a recent, intrusive burial, and a single glass bead "on or just beneath the surface, at a considerable distance from any burial," nothing unquestionably of European provenance was present in this mound. Associated with human remains, each a foot and a half from the surface, were ornaments of sheet-copper. Two feet from the surface, in place on a finger-bone, was a ring wrought from a band of sheet-copper.

The mound at the northern end of Creighton island was a sort of cemetery extending over 100 feet by 116 feet. The maximum height was about three feet, and certain interments, in pits, were three feet deeper still. Though two hundred and twenty skeletons were met with, no object of European make was found. The copper chisel—the only copper found here—lay with a burial in a pit, nearly six feet from the surface.

It will be seen by these details that the instances cited do not prove a European provenance for the copper found, and, in addition, I may say that among the many scores of mounds I have demolished, I have met with a number of large mounds where copper, including sheet-copper, associated only with objects purely aboriginal, lay from bottom to top, so that it would seem hardly fair to say that copper is usually met with near the surface of mounds.

I shall now try to prove my contention that copper met with in the mounds is not necessarily of European origin, and, as sheet-copper would seem to be more difficult for the aborigines to produce than other objects of copper, I shall bring forward proofs in relation to sheet-copper mainly, for if it can be shown that much of the sheet-copper of the mounds is native copper and consequently of aboriginal make, the origin of other objects of native copper may be taken for granted.

ASSOCIATION

I have written elsewhere that objects in mounds, like persons, are known by the company they keep, and the more mounds one opens the more one becomes convinced of this fact.

When one opens a mound which was made after contact of its makers with the white man, one is likely to realize that fact by the nature of many of the objects found in that mound. Lead, glass, earthenware with a glaze, pewter, iron (except meteoric iron), and brass are distinctly of European provenance and are found in abundance in mounds whose makers have had an opportunity to acquire them from the whites; and here it may be said that much of the so-called copper from post-Columbian mounds is in reality brass — most, if not all, of the so-called copper kettles are brass, and much so-called sheet-copper is brass, though, of course, some sheet-copper was furnished the aborigines by white men, but this copper, by its component parts as shown by analysis, is just as distinctly European as the other articles in the list given above.

On the other hand, when one demolishes a mound of any size, and, after the exercise of the utmost care, among many objects met with finds nothing of European provenance, it would seem safe to infer that the mound was completed before intercourse with Europeans began.

Among the great number of mounds I have leveled in the south, there have been a considerable number in which sheet-copper has been associated with objects of aboriginal make, from the bottom to the top, and these mounds have yielded nothing distinctly European. Among mounds of this class I may cite the great Shields mound, near the mouth of St Johns river, Florida; the famous mound known as Mt Royal, Florida; and the large mound on Tick island, near St Johns river, in the same state, full accounts of which have appeared in my reports published by the Academy of Natural Sciences of Philadelphia. Does it seem possible that the aborigines, trading with whites, should obtain from them sheet-copper only, or that, obtaining articles of different kinds, they should select only sheet-copper to put into these mounds and carefully exclude all other foreign articles?

RESULTS OF ANALYSES

Before giving results of analyses of copper, it may be well to remind those who have not made a speciality of this subject that, in copper analyses, a difference of a unit or two, as in the case of

the barometer, amounts to a great deal. Copper, for instance, containing two percent of impurities is a very impure article indeed.

Results of analyses of native copper, which results coincide with analyses of most of the copper from the mounds, differ as greatly from analyses of copper furnished to the aborigines by the whites, smelted from the arsenical, sulphide ores found in Europe, as day does from night.

Here is the result of an analysis of sheet-copper from Mt Royal, made by A. R. Ledoux, M.S., Ph.D.:

Copper	99.85 percent.
Silver	trace.
Iron	trace

Sheet-copper from the Grant mound, according to the analysis of Ledoux & Co., showed :

Copper.....	99.730 percent.
Iron	00.034 “
Silver.....	00.023 “

In a mound near Piketon, Pike county, Ohio, Mr Gerard Fowke found a certain quantity of sheet-copper which was 99.9130 percent pure.

Now let us consider analyses of copper unquestionably obtained from the whites by aborigines.

I am indebted to David Boyle, Esq., of the Ontario Archeological Museum, for a fragment of copper taken by him from a grave of the Tobacco Hurons, with articles of European origin, which yielded to analysis :

Copper.....	98.970 percent.
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Impurities present were silver, iron, arsenic, antimony, nickel, cobalt, and lead.

Lead was used in former smelting processes in Europe, but is not found in native copper. This presence of lead in European copper until recent times, and the absence of lead from native copper, are practically another final test ; for if it is shown that much of the copper of the mounds does not contain lead, it is evident that this copper is native copper, to which Europeans did not have access at that time.

It must be borne in mind, however, in testing copper for the presence of lead, that sulphuric acid itself often contains lead, and that before making important analyses the sulphuric acid to be used must itself be tested, without regard for the statement of the manufacturer. This point cannot be too strongly emphasized.

Copper rivets from an Iroquois brass kettle, Fleming, N. Y., showed copper 97.03 percent, and as impurities, lead, silver, iron, cobalt, nickel, arsenic, antimony, and bismuth.

A sheet-copper ornament found by me near Montgomery, Ala., in a mound which contained many articles of European origin, analyzed by Dr H. F. Keller, yielded: copper 97.425 percent and ponderable quantities of lead, silver, bismuth, antimony, arsenic, iron, and nickel.

Here we see the great list of impurities which appear in copper admittedly smelted from the arsenical, sulphide ores of Europe, and this was the only kind of copper Europeans possessed in those days.

Although at the present time, in Europe, copper is smelted by improved processes to yield a high percentage of the pure metal, yet ponderable quantities of many impurities still remain in it. Analyses of modern German (Mansfeld) copper give 99.2 percent to 99.5 percent of the pure metal and ponderable quantities of silver, gold, arsenic, antimony, bismuth, lead, iron, cobalt, nickel, sulphur, and oxygen.

In conclusion, then, I make the following offer to those who continue to maintain that all the sheet-copper from aboriginal mounds is of European origin, or to cite the presence of sheet-copper with objects in mounds irrespective of the degree of purity of the copper, as a proof of the European origin of these objects. I will furnish sheet-copper from aboriginal mounds in Ohio and in Florida, in which mounds no object distinctly of European make was met with, and will name an expert to analyze the copper in conjunction with an expert named by the other side, that this matter may be settled, if it is not settled already.

I doubt not that those who have carefully followed this paper will agree with me that the results of analysis will show a copper not only far purer than any that can have been smelted from the

arsenical, sulphide ores of Europe by the imperfect processes of the fifteenth, sixteenth, seventeenth, and eighteenth centuries, but will give, moreover, a far shorter list of impurities than copper that is smelted in Europe even at the present day.

DISCUSSION BY JOSEPH D. McGUIRE

The paper just read is apparently due largely to my suggestion that the sheet-copper found by Mr Moore in the sand mounds of Florida owed its origin to European influences. The two volumes issued by him illustrative of two winters' labor in Florida are works any one could well be proud of; the illustrations are most excellent, and from them we are able to judge fairly well what the objects themselves are, and what their ornamentation, whether that of a period of savagery or of civilization.

I have been invited by Mr Moore to give my views on the subject, and I do so with great pleasure, as it is one of more than ordinary interest to archeology and to archeologists.

The articles found by Mr Moore consist largely of objects of extremely thin sheet-copper, embossed and ornamented commonly by *repoussé* work of dots, lines, or curves, and of certain pieces thinly overlaying objects of wood, etc. The thinness of this sheet-copper may be judged from the specimen I now present, which was sent to me by Mr Moore some years since.

It will not be questioned that the metal found is of wonderful uniformity if it belongs to a pre-Columbian period and owes its origin to a people living in a pure age of stone and of savagery. Its thinness cannot be compared with anything found elsewhere in the Americas, unless it be with certain objects found in the mounds of Ohio. The technical skill necessary to produce such material is of no mean order, and we are not accustomed to place the primitive Floridian in the human family above the average in culture of the American Indian as he was first found by Europeans. Had there been a people producing such objects at the advent of the whites, can it be questioned that such a fact would have been referred to by early writers who have recorded everything with which they came in contact worthy of notice? The absence of such reference,

however, is merely negative and proves nothing, but it is testimony bearing on the subject and consequently is worthy of consideration.

I shall first discuss the subject from a technological standpoint, being able in that respect to advance something more than theory alone, having experimented some years since in the U. S. National Museum for two or three months in hammering copper, both cold and hot, with stone implements chiefly, but also with a metal hammer on an anvil.

The crude metal is primarily in the condition it comes from the mine ; that is, in the nugget or in the sheet as found in the fissure of the rock. There is some evidence of prehistoric melting of metals among the more highly developed people of South America and Central America, but none referring to such methods being practised by the aborigines of the United States. If I am correct, we must treat the subject as work performed by means of some process of blows or pressure, the sheet by blows of a stone hammer upon a piece of metal lying on a hard surface. Among the finds in the Florida mounds I observe no reference to implements with or upon which such sheets could be made at all approaching those found by Mr Moore.

Experimenting with copper from the mines of the Lake Superior region, I found, in each instance of many made upon nuggets of varying sizes, that almost from the very beginning of the hammering process the metal began to crumble and continued to do so whether it was hammered cold or hot. After experimenting with stone tools, those of steel were resorted to with results little if any better, so far as producing sheet-copper was concerned. With a sheet of native Virginia copper much better results were obtained with stone tools, and the process was entirely successful to the point corresponding to that referred to by one of the early writers who spoke of the natives having metal which could easily be bent between the fingers. By using an anvil and a steel hammer, naturally much better results could be obtained.

A second suggestion contradictory to the belief that these objects were of native conception, is the embossed work on most of the objects to which reference is made in Mr Moore's publications. The magnificent object over ten inches broad here shown from the

Mt Royal mound, from an esthetic point of view suggests European influence and is far superior to any object of admittedly pre-Columbian origin. The typical *repoussé* work suggests a familiarity with characteristic metal-work of Europe not consistent with savage methods or culture.

From Peru, throughout the Gold Coast, through Central America, and throughout eastern United States as far north as Canada, every early traveler refers to metal being possessed by the natives, and that metal copper, though it is contended that no single reference to really primitive metal refers to embossed work such as Mr Moore presents in his publication.

The pipes from Tick island and Grant mound do not by their form suggest great antiquity to the writer, although next to the straight tube they are in the writer's estimation one of the oldest of pipe forms.

A canine tooth found at Tick island, according to Cope, was not wolf, nor coyote, but dog, and this was found in the shell base. That the mounds varied in age Mr Moore does not question, but his argument that not finding European objects in a mound is evidence of their being pre-Columbian cannot be admitted as a scientific fact.

The age of objects of copper in America, especially if from the mounds, wherever situated, is by no means so universally accepted as Mr Moore's paper suggests to be the case.

The allusion in my publication on pipes¹ questioning the American origin of copper in the mounds, relates to pipes of the "*mound type*" being usually associated with objects of copper and therefore showing European influences. This assertion I desire to reiterate. But the "*mound pipe*," as my publication shows, owes its origin, in the writer's opinion, to the metal file, and the "*mound pipe*" is not found in Florida.

If through inadvertance, as suggested, I have made it appear to others that Mr Moore has in any way been misquoted, no one can regret it more than I do; but reading over the paragraph carefully, I do not see that Mr Moore is quoted as other than the discoverer of the objects referred to.

¹ *U. S. Nat. Mus. Rept.*, 1897, p. 523, etc.

The writer believes that the American Indian was an apt pupil, possessed of rude implements of copper at the advent of the whites. He learned in Florida in 1518, and subsequent to the destruction of the Narvaez expedition, much of the use of metal; he learned more from the De Soto expedition in 1540; he traded with Raleigh's expedition in 1584-85; and Captain John Smith repeatedly refers to trading copper with Powhatan, who was no exception to the Indian who was always eager to possess the shining kettles of the European.

It may not be amiss to suggest that the *repoussé* work appears in European armor of the sixteenth, seventeenth, and eighteenth centuries, and that possession of metal by the natives was greatly added to by trade with the whites, by wrecks, and later by mining.

MR MOORE'S REPLY TO MR MCGUIRE

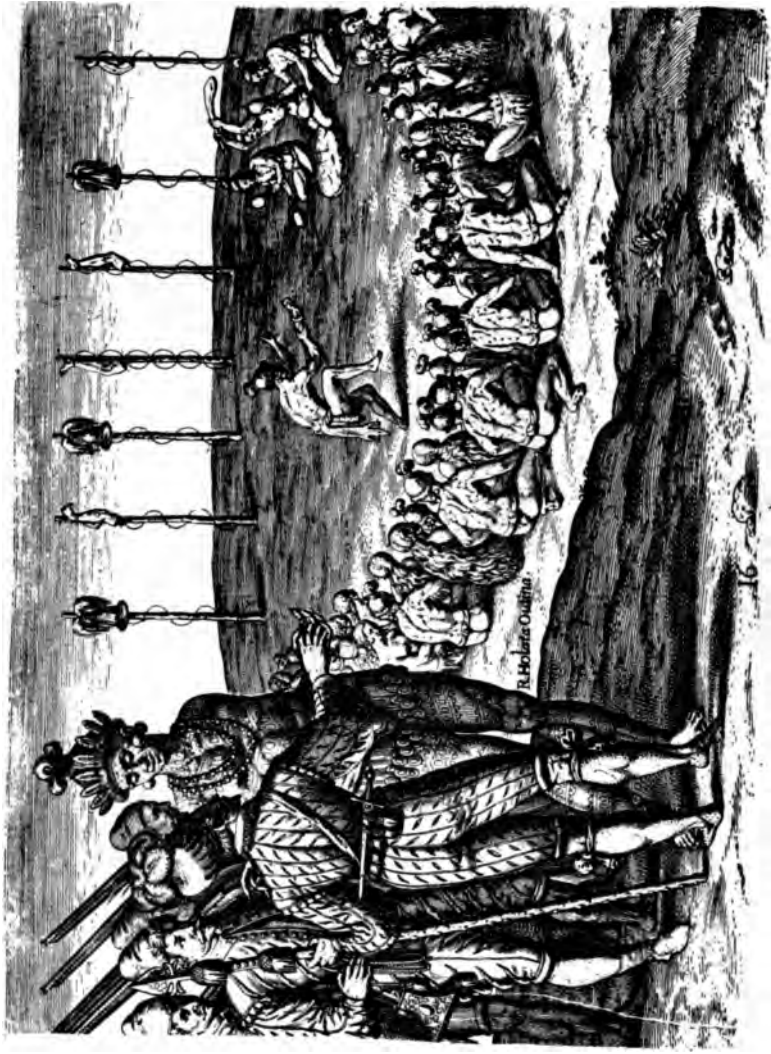
Mr McGuire's reply to my paper on aboriginal copper, which was read before Section H at the last meeting of the A. A. A. S., has courteously been submitted to me.

It should be a matter of congratulation to archeologists that one so well known as Mr McGuire has come forward to state his grounds of disbelief in sheet-copper of purely aboriginal origin, since arguments on both sides, when presented together in the *Anthropologist*, must greatly add to a clear understanding of the matter. It must be a subject of regret to all, however, that to the chemical side of my paper, where assertions pro and con are capable of exact determination, Mr McGuire makes no reply whatever.

I shall now take up, in order, the points advanced by Mr McGuire in his reply to that part of my paper which he has answered.

It is impossible to judge of the original evenness and thickness of the sheet-copper found in mounds, especially in Florida mounds, which are of sand and allow free access of water, thus facilitating the formation of the oxide and of the carbonate which, in the course of time, considerably impairs the original volume of the sheet-copper. Indeed, at times, in these mounds, there remains of an ornament but a minute fragment, sometimes only a stain on a bone.

The sheet-copper found by me and by others in mounds is not of uniform thickness, and incidentally it may be said that no two



A PLATE FROM DEBRY, SHOWING USE OF COPPER ORNAMENTS

ornaments from the mounds are exactly alike. Sheet-copper ornaments with *repoussé* decoration have been found by me, not alone in Florida, but in Georgia and in Alabama. Moreover, sheet-copper ornaments and ornaments overlaid with sheet-copper have been found in Tennessee, while the deposits of copper found on the Hopewell altars and in other mounds of Ohio are too well known to need extended reference here.

The presence of embossed ornaments is not unrecorded by early historians as Mr McGuire would have us believe. We have but to turn to the plates of Le Moyne, an eye-witness, in De Bry's *Florida*, particularly plates XII, XIII, XIV, XVI, and XVIII, three of which are reproduced in this paper, to see depicted on aborigines the very type of embossed ornaments which I have taken in numbers from the Grant mound near the mouth of St Johns river, which must have been within a short distance of where the ill-fated French Huguenots built Fort Caroline in 1564, and near where, says Laudonnière, lived the chief "Satourioua, our nearest neighbor, and on whose ground we built our fort." (See plates VIII to X herein.)

It is believed that the point visited when the expedition from Fort Caroline sailed up the river May (St Johns) was near the northern extremity of Lake George, since this is the only lake on the river filling the conditions of the description. If such is the case, the headquarters of the great chief Outina must have been near Mt Royal, where I found numbers of embossed ornaments of sheet-copper, including one, a representation of which we give (figure 1), closely resembling those shown by Le Moyne on chief Outina. While Le Moyne was not always exact as to details in his drawings, yet there are many novelties which he portrays with



FIG. 1.—Ornament of sheet-copper from the Mt Royal mound. (Actual size.)

comparative fidelity, including scalps, shell drinking-cups, shell beads, ear-plugs, ceremonial fans, serrated spear-heads, a wooden mace as found by Mr Cushing at Marco, a method of attaching ornaments by running a cord or sinew through the center and knotting on the outside, etc. Is it not certain, then, that copper ornaments the exact type of those found by me in mounds of St Johns river, situated on the very spots visited by the Huguenots with whom Le Moyne was, must have been seen by him on the aborigines, as portrayed by him?

There are slabs of stone and abundance of hammer-stones and pebble-hammers in the Florida mounds, which would have served well for the manufacture of sheet-copper. I am not prepared to demonstrate, however, that copper ornaments found in Florida were made there, though I do not see why they should not have been.

I do not see for what purpose Mr McGuire has referred to his ill-success with Lake Superior copper, which, as the reader is aware, is native copper. Is it to show that "Lake" copper is not malleable, and, therefore, that sheet-copper ornaments could not have been made from it? It is too well known that very much of the copper from Lake Superior is malleable to call for further discussion.

As to embossed work showing European influence, as Mr McGuire states, it can be said in opposition that embossed work is shown in De Bry and that it is extremely unlikely that in a comparatively short time objects made by, or with the aid of, Narvaez' or De Soto's men could have been widely spread throughout Florida.

As to the breast-plate from Mt Royal (figure 1), I would say that to many archeologists it does not of necessity suggest European influence and is not believed to be far superior to any object of pre-Columbian origin.

It is contended by Mr McGuire that no single reference by early travelers to really primitive metal refers to embossed work such as is shown in my publications. It would be hard to prove just what style of copper is referred to by early travelers in certain cases. They did not always go into minute details, sometimes speaking of "a vessel of wood," "a vessel of clay," etc., and embossed work might not be deemed worthy of especial description. We have seen, however, how, when it became necessary for Le



A PLATE FROM DE BRY, SHOWING USE OF COPPER ORNAMENTS

Moyné, the artist who accompanied the Huguenots to Florida and was with them at Fort Caroline, to show what he had seen, embossed ornaments were faithfully portrayed.

The pipes from Tick island and the Grant mound do not suggest great antiquity to Mr McGuire. It seems hardly fair for Mr McGuire here to cite the presence of certain pipes in these mounds in order to show a comparatively recent origin for the copper found with them, and then in his work on pipes to instance the presence of copper to show a late origin for pipes.

I freely admit that the remains of a dog were found by me in the base of the Tick island mound and that they were contemporary with the mound. Surely Mr McGuire does not cite this to show European intercourse with the makers of the mound. The existence of the aboriginal dog is admitted. Cabeça de Vaca, one of Narvaez' men (1527 and later), who spent some time in north-west Florida, repeatedly refers to numbers of dogs. White men could not have distributed these animals through Florida at this early period.¹

It is true that not finding European objects in a mound is not absolute proof that the mound is pre-Columbian, but it is a strong argument to that effect, and when a number of large mounds in a district, as is the case in Florida, or all the mounds in a district, as in the Scioto valley (whence came the famous Hopewell deposit of sheet-copper ornaments), show no object of European provenance, then the evidence seems very strong indeed. Of course the distinctly intrusive burial, which so often has European articles with it, must not be cited as proof of the post-Columbian origin of a mound. Incidentally I may say that in the great Grant mound, in Mt Royal, in the Tick island mound, and in other large mounds of Florida, no intrusive burial was met with.

Mr McGuire believes "the age of objects of copper in America, especially if from the mounds, wherever situated, is by no means so universally accepted as Mr Moore's paper suggests to be the case."

¹ The dog had been domesticated and was used as a beast of burden also by the Apache Indians of the plains of Texas at least as early as 1541. For references to dogs seen by members of Coronado's expedition, see Winship, "Coronado Expedition," in *Fourteenth Report, Bureau of Ethnology*, passim. —EDITOR.

To this I would reply that, judging from letters received by me when my original paper on aboriginal copper was published, I do not think Mr McGuire could then have found a corporal's guard among the archeologists of America to say it was their belief that sheet-copper from the mounds is, of necessity, of European origin, and it is my belief that Mr McGuire now would be unable to name any archeologist of note in the United States who shares his views as to copper. I trust Mr McGuire, whom I esteem most highly personally, will pardon me when I say that I have undertaken to show what I believe to be the weakness of his position as to copper, not because I consider his opinion of much avail as against that of the archeologists of the United States, but for the reason that archeologists of Europe, having seen Mr McGuire's views as to aboriginal copper in a Government publication, might suppose these views met with endorsement in this country, which is certainly not the case. Mr McGuire has kindly consented to write a few lines in sur-rebuttal of this reply of mine. I would esteem it a favor were he to name, for the benefit of the archeologists of Europe, such American archeologists as share his views.

By stating that the mound pipe has not been found in Florida, it seems to me Mr McGuire weakens his argument as to Florida copper, from his standpoint. Truth compels me to say, however, that I have found "monitor" pipes in Florida mounds, though not in the mounds of the peninsular part of the state.¹

I would say, however, that many archeologists disagree with Mr McGuire as to the presence of file marks on mound pipes and believe that there are no marks on them but could have been made with tools of stone.

I did not assert in my paper that Mr McGuire had not given me due credit as discoverer of the copper objects in the Georgia mounds, but I did think that Mr McGuire, inadvertently, had described the objects discovered by me in a way to make them appear of European origin.

As to the copper which Mr McGuire says was acquired by the Indians by trading and by shipwreck, I can only repeat that much

¹ *Certain Aboriginal Remains of the Northwest Florida Coast*, part II, pages 225, 238, 256, fig. 213.



A PLATE FROM DEBRY, SHOWING USE OF COPPER ORNAMENTS

of ~~what~~ has been called sheet-copper, found with late burials, is in reality sheet-brass, and as to this I can speak from personal experience, often repeated, and that the so-called copper kettles I have seen have been brass kettles and that such sheet-copper as could have been procured by trading or by shipwreck would, of necessity, be European copper and that European copper is as different from native copper as night is from day and that analysis has shown the copper from mounds in Florida, in Ohio, and elsewhere in which no object distinctly of European provenance has been found, to be native copper.

In conclusion I would say there is no one whose conversion to our way of thinking as to aboriginal copper would be more welcome than that of one who has given so much attention to the subject as has Mr McGuire, and it would seem as though this consummation might be realized, for Mr McGuire, step by step, is abandoning his original position, as what follows will clearly show.

In his interesting memoir on pipes, Mr McGuire says (page 523): "His reference from a naturalist's standpoint naturally ignores the technological consideration of the subject, as well as the contemporaneity of metal in the mounds, especially copper."

Here Mr McGuire cites the presence of copper, just copper, as a proof of modern origin.

Continuing, he says, "also the many asserted discoveries of objects of undeniably European manufacture, such as an implement of copper."

Here it is copper wrought into implements, at which Mr McGuire draws the line.

Mr McGuire now admits in his answer to my paper that rude implements of copper were in the possession of the aborigines before white contact; he thus abandons his former position as to the metal copper and implements of copper.

Now we come to the next step. In a late writing Mr McGuire cites the presence of *sheet*-copper with a pipe as an evidence of its European origin. Here we have the line drawn at *sheet*-copper.

But now Mr McGuire, in his reply to my paper, admits that he has made from native metal a copper that will bend backward and forward, and cites an early writer to show that copper of this de-

scription, which practically was sheet-copper, was found by the whites in the possession of the aborigines; so here Mr McGuire goes still another step farther, to rude sheet-copper in pre-Columbian times.

Finally, in his reply to my paper, the line seems to be drawn at thin and uniformly made sheet-copper, embossed; so Mr McGuire seems to be gradually abandoning his contention and to be coming toward us step by step. Let us hope that his next step will be to throw overboard what is left of his theory as to copper and join the camp of those who, relying on proofs, — historical, technological, chemical, and of association, — believe in the purely aboriginal origin of most of the mound copper.

MR MCGUIRE'S CONCLUDING REMARKS

The opinion originally expressed, that the discovery of sheet-copper among aboriginal remains, wherever found, is suggestive of European influence, is not weakened in the slightest by Mr Moore's reply to my criticism of his paper, as I shall endeavor to explain, following the order of his remarks.

It cannot justly be a matter for regret to archeologists that I make no reply to the "chemical side of the paper" when I admit my inability to do so from a chemical standpoint, and would consequently not be excusable were I to attempt to argue a subject upon which I knew I was incapable of intelligently expressing my views.

I do not hesitate, however, to venture the assertion that the formation of carbonate and oxides has not impaired the original evenness and thinness of Mr Moore's copper finds to a degree sufficient to prevent our seeing enough to form a fair estimate of the original appearance of these interesting objects, the technique of which is so indicative of an art peculiarly un-American, as is shown in Mr Moore's figure 1. There is an evenness about it and a regularity suggestive of the handiwork of a skilled metal-worker, and if that worker was an Indian the white man must have taught him the use of the tools. That the Indian in certain localities was an apt pupil in metal work is related by more than one historian of Mexico and Peru, who early observed that in working metal the Indian quickly surpassed his Spanish teacher in skill.

The *repoussé* work, consisting of dots, lines, and curves (including circles) impressed on thin sheet-copper, as shown by Mr Moore's discoveries, means infinitely more than the mere hammering down of a nugget, for evenness had to be maintained throughout, and when attained it was requisite that it be continued throughout the whole process of creating the *repoussé* decoration or effect.

The amount of copper found by Mr Moore in his excavations indicates a source of supply more abundant than can be imagined to have been furnished by aboriginal trade, regardless of whether the supply came from Lake Superior or from Virginia, though such supply could have been furnished by the whites, with whom we know the Indians, from the very beginning, and from the St Lawrence to the Rio Grande, traded for copper.

Le Moyne, the artist and author of the De Bry plates, was in Florida with the expedition of René Laudonnière, about 1565. The plates referred to are in De Bry's *Brevis Narratio* which constitutes part 2 of the *Collectiones Perigrinationum*, published in Frankfurt-on-the-Main in 1591. Of this work Joseph Sabin, in his *Dictionary of Books Relating to America*, says: "It is true that numerous plates were added to these texts, but they had been made for the most part after fanciful designs, adapted, some well, some ill." Mr Moore, in apology, however, himself suggests Le Moyne's want of exactness as to details. But admitting, for the sake of the argument, Mr Moore's contention that Le Moyne did see these objects, I would call attention to plate 42, one of the series in this same volume, which represents an Indian standing over a French prisoner in the act of killing him with *an axe*, the axe having *an eye* to it and *a helve in the eye*. Therefore, to follow Mr Moore's line of argument, we should believe that the natives possessed such axes prior to the arrival of the whites, although we have Laudonnière's assertion that he compensated the natives who sent him presents, with axes, knives, glass beads, and mirrors.

The plates represent, let us admit, metal plates; they hang on the breasts of the natives and from their girdles, and in the foreground of one illustration are represented quite a pile of them. In De Bry's plate 12 a native sorcerer is represented as kneeling in *D'Ottigny's shield*, which is of the exact type of the metal plates

figured. Let us go one step further in this interesting inspection. Laudonnière records that these natives told him that their women danced with plates of gold hanging from their girdles, the greater part of which came from the Spanish ships wrecked fifteen years before (or about 1550), and that numerous ships were wrecked in the straits. In the legends describing the forty-two plates of De Bry's second volume, there is not a word of reference to copper ornaments, an omission which would appear very singular were one to suppose Le Moyne's figures accurate.

Hariot, in 1585, referring to the Raleigh expedition, describes conditions more accurately when he refers to receiving twenty-six deer-skins in exchange for a copper kettle, which the Indian immediately knocked a hole in and suspended from his neck as an ornament; and this occurred on the Carolina coast, presumably nearer the source of aboriginal copper supply than was Florida. At this time Ralph Lane wrote from Roanoke to the Company in England that they could do no better than to send over copper articles of all kinds with which to trade, quaintly expressing his views that "copper caryeth all so it be red."

I agree with Mr Moore that copper ornaments found in Florida could have been made there as well as anywhere; but that signifies nothing, for the plates, if made in Florida, must have been fashioned through white influence, as shown in every line, and by their evenness and their curves. My reference to working nugget copper from the Lake Superior region was given for the purpose of recording my own experience — to show that *I* could not work it, although the specimens were sent to me as the most ductile they had in the region. But I did work a piece of fissure copper, from Virginia, to such thinness that I could bend it with the hand.

Regarding the embossed work figured in De Bry's illustrations, I submit there is no more reason to attribute it to savage origin than there is to so attribute the eyed axe above referred to.

Narvaez was in Florida in 1528; twelve years later De Soto passed through the country; both lost men there, and the numerous Spanish wrecks on the coast must have thrown many men into the hands of the natives up to the time of Laudonnière, from whom the natives could have learned the art of copper working. Le

Moynes, if he saw the plates, recorded also seeing the eyed axe. If seeing the plates made them aboriginal, what prevents the same argument from applying to the axe?

Having made an exhaustive study of aboriginal American pipes, or perhaps I should say primitive pipes, there can surely be no objection to my drawing deductions from personal experience, especially where it is confined strictly to a line along which I am supposed to be able to form them intelligently.

I do not deny the existence of dogs in Florida before the coming of the whites, nor do I admit it. I would say, however, that the want of references to dogs in the literature of the region indicates the probable absence of that animal, though the Coronado expedition found dogs in the west in 1541 used as pack-animals, while Cabeça de Vaca refers to dogs hundreds of miles west of where Mr Moore's discovery of a dog bone was made.

I do assert that the presence of dog bones in mounds is suggestive of European intercourse, and the same argument applies in the case of the finding of the bones of the great auk in a Florida shell-heap, which gave rise to much discussion as to how they got there. My suggestion that they may have been brought as sea stores by early voyagers was not received as worthy of consideration, but when so distinguished an osteologist as F. A. Lucas recognizes from the same shell-heap "the humerus of a typical dachshund,"¹ the suggestion I first made becomes almost a certainty, for the dog bone came from the same part of the heap as did the bones of the great auk.

I see no reason why I should not reiterate my remark "that the age of copper objects in mounds is by no means so universally accepted as Mr Moore suggests." In this category I include also the finds in the Hopewell deposit as a matter of course. I claim that sheet-copper is suggestive of European influence and have difficulty in believing Mr Moore serious in asking of me the name of "any archeologist of note who shares my views as to copper." I have asserted that there were such, and reassert it now. I may go even further and say that I can name one archeologist of international reputation who agrees with me that the thin sheet-copper

¹ *Science*, February 20, 1903.

with *repoussé* work on it owes its origin to European influence, but I have no right to bring others into a controversy for which Mr Moore and presumably others hold me alone responsible, a position which I am perfectly willing to defend. I can only feel grateful to Mr Moore for his personal opinion expressed of me individually, even though he does not consider my opinion of "much avail" on the copper question. But let us keep to the text and argue our subject to archeologists, who form our jury.

In such papers as I have written for publication by our National Museum I have never thought for an instant that any one could suppose what I have said should be considered to have official significance, for my work was solely that of a volunteer who had made a study which was regarded as of sufficient value for publication by the Museum and which would be accepted by students as the author's opinion and entirely on its own merits.

Pipes of all forms in the United States, except the tubular pipe, as I have shown in my paper, belong in contiguous areas. To this I know of no exception. Both the mound type of pipe and the monitor pipe I have asserted to be of comparatively recent origin, for the reason that in places on certain of them are observed a number of flat surfaces or facets, and in or on these facets appear series of three, four, and five (commonly the latter), straight lines, parallel and equidistant. These facets I can intimate only with a file. I cannot reproduce them with *any stone tool*, and could only be convinced to the contrary by some one actually reproducing the marking or something slightly resembling it. I have explained my views on this subject to many archeologists, and assert that, up to the present, from no one have I heard a suggestion indicating a method by which the work could be imitated. When it is shown to be due to an Indian method of work I will be glad to accept the proof, for no good will be gained by maintaining a contrary course. Those pipes, considered artistically, are indicative in every line of European technique.

Mr Moore's assertion that the copper which I suggest was acquired by the Indians through trade and by shipwreck was sheet-brass as he can assert "from personal experience, often repeated," brings into the controversy the assertions of Hariot, Smith, and

others that the Indians so traded, and further, examples of copper kettles in the National Museum, of European make, worked into ornaments, are too numerous to admit of doubt as to their existence.

For Mr Moore's kind wishes for my conversion "to our way of thinking," I feel very grateful, and join freely in his wish, for its accomplishment is but a prerequisite to conviction of error, and when Mr Moore or any other person maintaining a similar belief offers suitable proof to overcome my scepticism on this subject, I will gladly proclaim my conversion.

I have never denied the possession of copper by the aboriginal Americans ; on the contrary, I believe that practically all early voyagers, from the Cabots and Verazzano to Cartier and Smith, refer to the use of it, one writer saying they had it of a thinness allowing of its being bent between the fingers.

Every step of Mr Moore's argument in his reply to my remarks only emphasizes what I have contended from the beginning, and have never abandoned, that sheet-copper found in the mounds, or elsewhere, is strongly suggestive of European influence, consequently I fail to see what has been "thrown overboard"; but, to quote Mr Moore's words, "relying on proofs, historical, technological, and of association," there is not a particle of valid evidence to sustain the contention of Mr Moore as to the aboriginal origin of most sheet-copper. On the contrary the natives did possess and work copper rudely and as a malleable stone. But when copper is found in thin sheets and those sheets are embossed and ornamented with *repoussé* work ; and when spear-heads are furnished with sockets, and the sockets are furnished with nail holes, we may safely assert that white influences are proven.

Of the excellence of Mr Moore's work all American archeologists are proud, and its appreciation is neither enhanced nor lessened by the age of his finds. I even admit that the opinion of a majority of archeologists is adverse to my own on the subject of the origin of mound copper ; nevertheless I maintain the correctness of my views. An auk bone in one place and with a dachshund accompaniment, a glass bead in another, a crucifix in another, a ferule in another, medals in different localities, finger rings, curved base mound pipes, and even molded pipes with their artistic finish,

are all straws pointing in the single direction toward the first settlers, French, Dutch, and English, with their knowledge of artistic treatment and mechanical skill.

The case is not unlike that of the paleolith. A few years ago *all* believed it indicative of a low stage of culture in America and elsewhere. A few of us, after experiment, recognized in the paleolith a mere reject, the shape of which could not be improved. At first this was considered, like the case under discussion, heterodox; but a few were convinced in time, after thorough investigation, of the proper position of the so-called paleolith. There are yet those in America who place their faith in the paleolithic period, but they are gradually lessening in number. Our European contemporaries will, in time, be convinced of their error we feel sure. For myself, the thin sheet-copper, considered from any point of view, with its *repoussé* work has even less to stand upon and will in time be placed in the position to which it belongs, and that certainly post-Columbian.

Since concluding my remarks above I have re-read Dr Cyrus Thomas' paper on "Mound Explorations" in the Twelfth Report of the Bureau of Ethnology. Referring to certain well-known plates from the Etowah mounds, in which the *repoussé* work is prominent, Dr Thomas says (page 308): "That they were not made by an aboriginal artisan of Central America or Mexico of ante-Columbian times, I think is probable, if not from the designs themselves, from the apparent evidence that the work was done in part with hard metallic tools." Again (page 711): "What is here affirmed, and what, it is believed, can be successfully maintained by reference to and inspection of the articles, is, that many of them, found in the mounds as well as ancient graves, have been made from sheets of copper so uniform and even as to forbid the belief that they were hammered out with the rude implements possessed by the mound-builders of pre-Columbian times." Dr Thomas suggests that a careful chemical and microscopical examination might settle the point. I have submitted these quoted remarks to Dr Thomas, who says he is of the same opinion still. I submit that Dr Thomas' name will satisfy Mr Moore's request and be an answer upon which both American and European archeologists may ponder.

GENERAL DISCUSSION

REMARKS BY F. W. PUTNAM (PRESENTED IN HIS ABSENCE BY
ROLAND B. DIXON).

There is exhibited in the Peabody Museum of Harvard University a large collection of objects obtained from an altar in the great mound of the Turner group in Ohio. This mound was unquestionably of very considerable antiquity; and of the thousands of ornaments found on the altar, not one is in any way suggestive of contact with white people. In the collection there are several natural nuggets of native copper, others partly flattened by hammering, and several hammered into sheets of varying thickness. The copper ornaments were evidently made by hammering and cutting the copper into the desired shapes. This lot of copper illustrates the method of working the native copper by hammering. The experiments that have been made in the Museum show that native copper can be thus hammered with stones. Not only does this lot of specimens prove the hammering of native copper, but with these copper objects there were found also pieces of meteoric iron, native silver, and a few bits of native gold that had been made into ornaments by first hammering the metals into thin sheets. One large piece of meteoric iron was evidently in its natural form, and another small piece had been flattened by hammering. Experiments have proved that this iron can be hammered with a stone. Celts of copper and of meteoric iron, made by hammering, have been found in other prehistoric mounds and are exhibited in the Museum. The question of making ornaments and implements of native copper by hammering, I had considered as settled twenty years ago, at the time my observations on the subject were first published. Moreover, Mr Moore's research relating to the analyses of various copper objects found in the mounds is conclusive as to the origin of the copper.

REMARKS BY GEORGE A. DORSEY

I have been familiar with the Hopewell copper for many years, have worked over it a great deal, have done something myself in regard to hammering copper with primitive tools. While still a student at Cambridge I satisfied myself that all the copper from the Hopewell mounds was of Indian origin, an opinion which I still hold.

ARE THE HOPEWELL COPPER OBJECTS PREHISTORIC?

By WARREN K. MOOREHEAD

At the Washington meeting of the American Anthropological Association, held conjointly with that of Section H of the American Association for the Advancement of Science, I read a brief paper on the Hopewell copper objects, and it is now my wish to present a more extended communication on the subject.

Mr Clarence B. Moore, whose valuable work in southeastern United States is so favorably known to all who are interested in American archeology, has recently called my attention to two sentences in my review of Mr Fowke's *Archæological History of Ohio*, published in the *American Anthropologist* (volume IV, No. 3), which might be regarded by some as evidence that European objects were found in the Hopewell mounds of Ohio. If any one so construes these sentences, he gives to them an interpretation exactly the opposite of that which I wish to convey.

When the land on which the Hopewell group of mounds is situated was cleared, about the year 1800, it was covered with a heavy forest growth of oak, walnut, etc., but on the upper one of the two terraces of the enclosure the growth was largely of oak. Evidence based on the age of timber is very unsatisfactory, and one cannot say with certainty whether the largest trees growing from the mounds were two hundred or four hundred years of age. The fields have been cultivated for many years, and the height of each tumulus has been reduced and the diameter greatly extended. Our best evidence as to the antiquity of the mounds, therefore, is obtained from the excavations. These evidences are :

First. Five or six of the mounds contain peculiarly shaped altars of burnt clay. These are confined to southern Ohio and are not mentioned by the earliest travelers who witnessed the southern Indians building mounds. The altars here referred to are those of the type described by Squier and Davis and in my own writings,

and not those formed of blocks of wood, squares of stone, and similar structures.

Second. The presence of chalcedony from Flint Ridge. So far as can be ascertained the Flint Ridge material was not used in historic times.

Third. Substances not native to Ohio. In reviewing Mr Fowke's book I used the term "foreign" in allusion to objects found outside of Ohio; if I had been writing on the United States in general, I should not have employed the word, for in matters of such importance as the antiquity of the Hopewell group, one cannot be too careful in the use of explanatory terms. In no other mounds have so many different substances been found. Without going into detail I may mention as having been unearthed during the Hopewell excavations, copper, mica, obsidian, galena, a fossil, sea-shells, sharks' teeth, and Tennessee flint. Cannel coal, Flint Ridge material, and graphite slate were also found, but these cannot be considered to have come from a distance exceeding eighty or a hundred miles. Excepting the copper, these materials in themselves, whether obtained by barter or by travel, might not be evidences of antiquity, but the copper alone is sufficient to prove the pre-Columbian origin of the Hopewell group. The careful analysis made by Mr Moore and published some years ago in his "As to Copper from the Mounds of the St. Johns River, Florida," showed that copper not only from other mounds but that from the Hopewell group contained a higher percentage of *pure* copper than the European commercial copper of two centuries or more ago. This cannot be gainsaid. The presence of half-hammered nuggets in the Hopewell effigy mound was, to my mind, conclusive evidence. These nuggets do not present the smooth surface of copper beaten with an iron hammer, nor are the forms regular. They have undoubtedly been rudely shaped with stone hammers, showing a process but begun. In June last I visited Wisconsin and was astonished at the amount of drift-copper occurring on the surface between Two Rivers and Princeton, a distance of about one hundred miles. I obtained a hundred and thirty-eight pounds of specimens of varying sizes, some of which have been partly worked by man. The hammered pieces were larger than those found in the Hopewell group. None of

them was cut from European commercial bars; all are from the drift or were mined in the Superior-Michigan region.

Can the advocate of the modern origin of all our mound-groups, in which the highest culture is in evidence, claim that French, Spanish, English, Dutch, or American traders obtained metal carrying a higher percentage of copper than the European copper of the times in which they lived, worked some of it into such strange symbols as the swastika and many cosmic figures and combinations, or into thin sheets; made immense copper axes (one of which weighed nearly thirty-eight pounds), and long bar-shaped objects of solid copper weighing from ten to thirty pounds, such as has been found in Wisconsin; and after doing this skilful work have hammered with stones some ill-shaped nuggets and traded these masses of varying forms, representing many stages of workmanship, to the natives to be placed by them in the mounds? Is there any field evidence of such a contention? Can we logically conceive of an illiterate trader (for not one in a dozen of the early traders could either read or write) knowing aught concerning the swastika or the cosmic symbols? It is well known that traders did carry brass, beads, kettles, and the like into the Indian country; but imagine a trader visiting the Hopewell group with sixty-eight copper axes in his possession, ranging from four ounces to thirty-eight pounds in weight! And there is no European or American axe of white man's make of the peculiar form of the Hopewell specimens.

The designs in sheet-copper are so intricate that up to the present no one has been able to correctly interpret them. Professor Putnam and Mr Willoughby have published a paper on these strange designs which, up to the present time, is the only attempt at explanation that has been made.¹ To assert that any of the objects found during the Hopewell explorations are of European origin, or that the art products of these mounds were inspired by a knowledge of the white man's methods, is to assume a position, it appears to me, directly contrary to that which the facts warrant.

There is another strong argument in favor of the pre-Columbian origin of the copper objects from the Ohio mounds. La Salle's chroniclers are silent in regard to the Lower Scioto region, and it is

¹ "Symbolism in Ancient American Art," *Proceedings of the A. A. A. S.*, 1896.

not probable that any explorer or trader visited the Ohio valley prior to La Salle's time. If the villages of this section had been occupied by the Indians in 1669, when La Salle conversed with the Shawnee prisoner, he surely would have mentioned them.

Let us consider the field evidence again. An inspection of the village sites on the Scioto and its tributaries, where the Shawnees lived for so long, reveals very little village refuse. Save at Frankfort (in Ross county, six miles from Hopewell), there are no mounds or other works near the village sites. Now, curiously enough, the Frankfort site (Chillicothe-on-Paint¹) was to the east, and extended over the edge of a fortification of pre-Columbian character. There were four mounds in or near the enclosure, and it is well known that the Shawnees did not use them, and in these mounds we found the usual Lower Scioto copper objects, etc., when we opened them in 1888 and 1889.

The Shawnees buried their dead in trenches and graves in the eastern part of the town, and as these graves have frequently been opened, an excellent opportunity has been afforded of contrasting the modern with the pre-Columbian mortuary accompaniments. In these trenches and graves glass beads, brass kettles, and iron knives have been found with the human remains; in the mounds there were two small altars, pyrula shells, pipes, etc.; but in the graves no pyrula shells, no monitor pipes, no copper, no slate ornaments were found.

On the known historic sites in southern Ohio so little is found that, were it not for our records of Logan, or Tecumseh, or Cornstalk, we would be inclined to conclude that roving hunters incapable of producing men of ability lived there. The great Illinois sites mentioned by La Salle are covered with the usual village débris of bone, shell, stone, and clay, but not in such quantity as at Madisonville, at Two Rivers (Wisconsin), or at Highbys and other points on the Scioto. These Scioto sites not only display evidence of long occupancy by a few people or of a large population for a limited period, but they are surrounded by or are in combination with great enclosures or mound-groups. In them the art is not

¹ Chillicothe means "Place of residence." There were several towns bearing the name — Old, Upper, Lower, etc.

confined to the scanty scrapers, rude hammers, and knives or axes of the Shawnee and Illinois sites. On the contrary, the art is the best found east of the Pueblo country. If these tribes were living when Sir John Hawkins' men passed through the middle of the continent, about the year 1570, on their way from Nicaragua to Cape Breton, supposing that the sailors traversed the Ohio valley, they would have left us a glimpse of these Scioto sites. But the book on their wanderings is, of course, silent on the subject. It mentions the Iroquois, but that is about the only tribe we can recognize with certainty.

Dr Cyrus Thomas has said that the Shawnees came to Ohio in times of antiquity. I do not believe he has determined the date of this move—if he has, I court correction. That their village was alongside one of the earth enclosures, yet totally distinct from it; that the art products of the two are quite dissimilar—one being crude, the other more advanced,—are further evidences, to my mind, of the pre-Columbian origin of the mound-groups and their contents in Ohio, Kentucky, and Indiana.



a



b

PRIMITIVE COPPER WORKING

a, Part of a copper ear-ornament from a mound of the Hopewell group, Ohio. *b*, Modern copy of the above made by primitive processes.

PRIMITIVE METAL WORKING

By CHARLES C. WILLOUGHBY

Apropos of the discussion at the recent meeting of the American Association at Washington of the sheet-copper objects from the mounds, a brief account of an experiment in native copper working with primitive tools, made by the writer in 1894, may not be without interest. Only two trials were made to form sheets from native copper, both of which were successful. The first sheet produced was from a nugget from an altar of an Ohio mound, the second was from native copper from the Lake Superior region. But one attempt was made to form an ornament from a sheet of copper thus produced, the result of which is shown in *b* of the accompanying plate xi. The upper figure (*a*) of the same plate represents half of an ear-ornament from an extensive deposit of copper objects in a mound of the Hopewell group, Ohio. Although larger and more elaborate ornaments were found, this object was chosen for reproduction because its construction from a nugget of native copper involved all the various processes necessary for making any object of metal from these mounds—hammering, annealing, grinding, cutting, embossing, perforating, and polishing.

The experiment was carried out upon a sea-beach strewn with water-worn stones of all sizes. Placing upon a smooth stone a piece of native copper from the Lake Superior region, and using an oval water-worn stone as a hammer, the copper was carefully beaten. A few blows sufficed to show the tendency of the copper to crack along the edges as it expanded. This tendency was overcome by annealing. It was only by careful hammering and repeated annealing that the mass was formed into a thin sheet. When the sheet had attained the required size it was ground to a uniform thickness between two flat stones, the work being hastened by the addition of fine sand.

The sheet was cut into circular form by incising partly through the copper with sharp flints and breaking off the superfluous metal.

The rough edges were then ground smooth on stones. As the four disks forming the pair of ornaments which served as a pattern were remarkably alike in size and contour, and appeared to have been made over the same mold, a modern form of the required shape was constructed from a piece of driftwood by charring and scraping and cutting with sharp flints. Over this form the copper disk was molded by light hammering and by pressure, the burnishing and pressing tool being made from a splinter broken from a beef-bone found on the beach. During the pressing and embossing process it was necessary to anneal the copper several times in a small fire kindled upon the sand. The perforations were made by using a rudely chipped flint as a drill and reamer. The ornament was polished with fine sand, and afterward with wood ashes.

The remarkable objects wrought from copper, silver, and meteoric iron from the Turner and Liberty groups, Ohio, on exhibition in the Peabody Museum at Cambridge, and those from the Hope-well group in the Field Columbian Museum at Chicago, should be carefully studied by all students interested in primitive metal working. These collections include nuggets of meteoric iron,¹ copper, and silver, most of them hammered to a greater or lesser degree. Among the finished implements and ornaments are celts and small cutting tools of copper and meteoric iron; head, breast, and other personal ornaments of copper, meteoric iron, and silver, and spool-shaped ear-ornaments of copper, some of which are overlaid with thin sheets of meteoric iron or silver. Symmetrical hemispheres of clay from half an inch to two inches in diameter were very neatly covered with thin sheets of meteoric iron, copper, or silver, the plate of metal on the flat side of the ornament having two perforations for attachment. Many symbolic designs cut from thin copper are also in the collections,² and to a student of the higher symbolism of the American Indian these designs are of themselves sufficient proof of the native origin of the objects.

A dozen or more small sheets of gold hammered from small

¹ For notices of meteoric iron from the Ohio mounds, with drawings and analyses, also for a brief account of the objects from the Turner group, see Professor Putnam's notes in *Peabody Museum Reports*, vol. III.

² See *Proceedings of the American Association for the Advancement of Science* for 1895, p. 302.

nuggets, but otherwise unworked, were taken from one of the altars of the Turner group and may be seen at the Peabody Museum. With this fact in mind, one should not too hastily question the statements of early writers that gold objects have been taken from the Ohio mounds. The more important evidences tending to show that the sheet-metal objects noted above are of prehistoric origin, may be summed up as follows :

1. The extensive prehistoric mines where native copper and silver were obtained.

2. The occurrences in the mounds of native copper and silver in nuggets, both worked and in their natural state, in company with ornaments from thin sheets of the same metals.

3. The ornaments from the Turner, Hopewell, and Liberty groups are strictly of native design.

4. The motifs of the symbolic forms expressed in the designs of many of the objects are the same as those occurring in objects of bone, shell, and stone throughout a large portion of America.

5. The simple art of forming sheets of copper, silver, and gold (as well as the more advanced arts of metallurgy) was known and practised by the cultured tribes of the Peruvian region in prehistoric times. It is not probable that any archeologist will claim that the thin sheets from which many of the prehistoric Peruvian ornaments were cut, large though some of them were, were rolled by machinery, or that any processes other than those of hammering, annealing, grinding, embossing, and perforating were followed in their construction.

6. Practical demonstrations have shown that any of the metal objects from the above mounds could have been made by processes known to the Indians at the time of their first contact with whites.¹

7. There is no evidence whatever of the European origin of the sheet-copper from the Turner, Liberty, or Hopewell groups, or that the mounds themselves are of post-Columbian date.

¹ That the Indians of the low grade of culture of the northern Athapascans understood the art of annealing is shown by a passage in Hearne's narrative of his journey to Coppermine river in 1771. Writing of the native copper of that region, he says : " By the help of fire, and two stones, they can beat it out to any shape they wish."—Samuel Hearne, *A Journey to the Northern Ocean*, p. 175.

AMERICAN INDIAN GAMES (1902)

By STEWART CULIN

It is with some hesitation that I again present an article on a subject which has engaged my attention for many years. I propose briefly to summarize the results of my investigations of Indian games since 1897, when, in a paper read before the American Folk-lore Society,¹ I announced the conclusions to which I had arrived at that time. Since that period, chiefly through the enthusiastic energy of my friend Dr George A. Dorsey, a vast amount of new material has been collected which has greatly increased the probabilities of comparative study.

I have now to propose a new classification of Indian games, a classification similar to that used in the arrangement of the collection exhibited by the University of Pennsylvania at the Pan-American Exposition at Buffalo, and one designed to include all our aboriginal games in which implements are employed. Indian children play a great variety of games, chiefly mimetic, without implements, such as tag, etc., corresponding with those of the children of civilization, but their exclusion does not affect the issues which are involved in the present discussion.

The games of the American Indians may be divided into two general classes — games of chance and games of dexterity. Games of pure calculation, such as chess, are entirely absent. The games of chance fall into one of two categories: First, games in which implements, like dice, are thrown at random to determine a number or numbers, the sum of the counts being kept with sticks, pebbles, etc., or upon an abacus or counting board or circuit; second, games in which one or more of the players guess in which of two or more places an odd or particularly marked lot is concealed, success or failure resulting in the gain or loss of counters.

The games of dexterity may be enumerated as: First, archery in its various modifications; second, a game of shooting at a moving

¹ *Journal of American Folk-lore*, vol. XI, pp. 245-252, Oct.-Dec., 1898.

target consisting of a netted wheel or of a ring ; third, a game of sliding javelins upon the hard ground or ice ; fourth, the game of ball in several highly specialized forms ; fifth, the racing games, more or less interrelated to and complicated with the ball games. In addition there is a subclass of the game of shooting at a moving target, of which it is a miniature and solitaire form. Games of all these classes are found among all the Indian tribes of North America, and constitute the games, *par excellence*, of the Indians. Children have a variety of other amusements, but those above described are played only by men and women, youths and maidens, and not by children, and usually at fixed seasons, once as the accompaniment of certain festivals or religious rites.

There is a well-marked affinity and relationship between the manifestations of the same game, even among the most widely separated tribes, the variations being more in the material of the implements, due to environment, than to the object or method of play. Precisely the same games are played by tribes belonging to unrelated linguistic stocks, and in general the variations do not follow the differences in language. At the same time there appears to be a progressive change from what seems to be the oldest form, from a center in southwestern United States along lines north, northeast, and east. Similar changes probably occurred along lines radiating from the same center southward into Mexico. From such accounts of the Aztec games as have come down to us, they appear to be invariably higher developments of the games of the wilder tribes. Under no circumstances could they be regarded as the original forms. In the same way, the old games found in the cliff-dwellings are frequently of more highly developed types than those which exist among living tribes. The games of the Eskimo are all extensions of the same games we find among the Indians, but show always greater simplicity, lack of tradition, and a degradation of form which would preclude their being regarded as the source of the Indian games.

There is no evidence that any of the games above described were imported into America at any time, either before or after the conquest. On the other hand, they appear to be the direct and natural outgrowth of aboriginal institutions in America. They

show no modifications due to white influence other than the decay which characterizes all Indian customs under existing conditions. It is possible, however, that the wide distribution of the "hand game" is a matter of comparatively recent date, due to wider and less restricted intercourse through the abolition of tribal wars. Playing cards, and probably the simple board game known to the English as "merrills," are the only games borrowed by the Indians from the whites. On the other hand, we have taken lacrosse in the north and racket in the south; and the Mexicans of the Rio Grande play most of the Indian games under Spanish names.

My first conclusion as to the interrelation and common origin of Indian games was based on a comparative study of the stick-dice game, published in the Report of the U. S. National Museum for 1896. It appeared that the number of the sticks was originally four, and that the dice were originally made of canes, being the shaftments of arrows, painted or burned with marks corresponding with those used to designate the arrows of the four world-quarters. One of the four arrow-canes bore special marks which identified it with the throwing-sticks anciently used in the Southwest to propel an arrow in lieu of a bow. This specially marked cane, which gave an additional count when it fell uppermost, is perpetuated in a similarly marked implement giving an augmented count in a majority of the stick-dice games played throughout the continent. In the same way the marks on the other sticks can be referred very directly to the arrow-cane shaftments of the world-quarters. Again, in one of the widely distributed types of the guessing games, the number of places of concealment is four, and the implements in which the object was hidden were derived from the four marked arrow-shaftments of the four directions. In general, in all the games we find an arrow, or a derivative of the arrow, the predominant implement, and the conception of the four world-quarters the fundamental idea.

It became apparent that the relation of the Indian games to each other in the same area, and each to its counterpart among all the tribes, is largely dependent on their origin in magical ceremonies. Back of each game we find a ceremony in which the game was a significant part. The ceremony has commonly disappeared, and

the game survives as an amusement, but often with traditions and observances that serve to connect it with its original purpose. It follows that a correct understanding of the origin and final significance of our Indian games can be obtained only through a more or less perfect knowledge of the rituals and symbolism of the various tribes. Fortunately there remain certain tribes in which games occupy their original place in the religious life of the people, or a middle stage in which they are practised both as a rite and as an amusement. This is true both in Zuñi and in the Hopi towns of Arizona. The Zuñi war god Ahaiuta is the patron of games, and the offerings deposited at his shrine consist of miniature representations of the gaming implements. On the Hopi altars, which are erected in the kivas at the various annual ceremonies, the gaming implements are the most significant objects. This is especially true of the altars of the Flute fraternities, where we see the miniature ring and dart of the hoop-and-pole game, the kicking billets of the kicked-stick race, and the tubes of the hidden-ball game—the latter often stuck like flowers in two sand mountains, corresponding with the two sand mountains of the Zuñi game.

The altar itself frequently appears to be the place where the divination was performed with the gaming implements. Not a few of the ceremonial offerings that are made at shrines prove to be conventionalized games, and even the images of the gods themselves, round billets, are related in some direct way to the gaming tubes, if, indeed, they are not derived from them. In one instance a sand or dry painting is used as the gaming circuit or diagram.

Turning to the masks and other paraphernalia worn in the dances and ceremonies, we find a constant use of the gaming implements as essential parts of the costume. The ring at the base of the Hopi and Zuñi masks is the gaming ring for the hoop-and-pole game. We discover it again among the Hupa in California, where a feather dart is stuck in either side. It is not unlikely to be the origin of the headbands of the northern coast tribes. Indeed the rings and bands of Indian costume may in general be traced to the game ring. As an illustration in point we find miniature rings surprisingly like game-rings worn as hair-ornaments by the Cheyenne, Arapaho, and Dakota. At last I learn that they are prizes for

the hoop-and-pole game, awarded to the successful contestant for a year.

Returning to the Hopi masks, we discover that their ring-shaped mouths are also gaming rings. On one the nose consists of a feather dart placed just above it. The masks themselves are derived from the tubes of the hidden ball. Their eyes are the balls that are hidden, and one finds the counting-sticks placed like a visor over certain specimens. Again, the netted hoop of the hoop-and-pole rises as part of the head-dress of other masks. The head-dress of the Flute priest at Oraibi consists of the corn-husk wheel and darts, and the four flower-like cups of the hidden ball.

Nor, as I have already indicated, is this use of gaming implements confined to any particular tribe or tribes. For example, the woven and painted cloth that is worn suspended from the forehead down the back, among the Hupa, is the mat upon which they played their favorite game of sticks, or *kin*.

Turning now from the altars and costumes to the ceremonies themselves, we find the games surviving in their original forms. The idea of the dual principles of nature—the masculine and the feminine—is everywhere conspicuous in their symbolism. The arrow, in general, is regarded as masculine. The common female symbol is the netted wheel or one of its many derivatives. This netted wheel is copied from the spider-web, the attribute of the Spider-woman, the Earth-goddess, the mother of the Twin War-gods. The ceremonies in which it is employed are magical rites to secure fertility, and the games in which it is used are all significant of the same idea. Among the Dakota it is called the elk game. The Pawnee know it as the buffalo game, and play it “to make buffalo.” The Wasco of Columbia river play it to insure a good run of salmon. Among the Hopi its employment is bound up with the fertilization and growth of corn. In its miniature and solitaire form, of which I have already spoken, it is played by lovers and is widely known as the “match-making” or “matrimonial” game.

Turning to another of the sacred games for which the implements are sacrificed upon the altar of the War-god, we find the stone ball of the kicking-race ceremonially deposited on the Hopi *Powamu* altar, and the race itself a magical rite to secure fields within its

circuit against sandstorms. The ball-race is repeated by many of the adjacent tribes, with some of whom, as with the Mexicans of the Rio Grande, it has lost all ceremonial significance.

In general the ball games have yielded least fruitful results to my comparative study. The two principal games were racket and shinny. The morphology of the racket is not yet clear to me. It appears to have some connection with the web of the Spider-goddess, but I am unable to demonstrate that this was the source of its origin. On the other hand it is a practical throwing contrivance, akin to the throwing-stick. The game of ball with rackets may be a dramatization of war. Mr Mooney has pointed out that the ball game receives the name of war among the Cherokee. Shinny in general is the woman's game, but among some tribes it is played by men. As to the ball, there are two forms, one bag-shaped, and the other disk-shaped, flat, with a medial seam. The two sides of the latter are frequently painted different colors, and the ball itself has a symbolism, not yet understood, referable to the earth, the moon, or the sun.

Of all the American ball games, the most interesting and peculiar is the widely-distributed woman's game of double ball. I found it among the Hupa, played by men with two billets tied with cords, and was led to refer it to the ceremony in the Hopi Flute "dance" where the Flute-boy and Flute-maid toss an annulet and a billet by means of a slender stick into the meal-traced cloud symbols, as they advance in procession back to the mesa on the ninth day of the ceremony. This theory received unexpected confirmation in a discovery made by the Hyde Exploring Expedition at Pueblo Bonito. Here, in a sacrificial deposit in one of the chambers, were a number of beautiful flutes, together with curved billets and sticks for throwing them, easily recognizable as having been used in a game or ceremony akin to the double-ball game.

Time and space do not permit me here to enter into a discussion of the details of the games. To me their direct interest is exceeded by the many side-lights which are thrown by their study on primitive life and thought, by the many practical identifications of things which heretofore have been strange and obscure. A single illustration will suffice: The Zuñi, like many other tribes, play a

dice game in a flat basket similar in form to the Oraibi basket-trays. It has been a favorite notion with me that this appliance was in some way a derivative of a shield, and I was led to collect information about the flat Hopi baskets. From a manuscript of the late A. M. Stephen, who spent many years among the Hopi, I learned that their name for shield is *tü-u'-po-o-ta*; but *po'-o-ta* is the name of these flat baskets. With this significant information it became apparent that these baskets, with their figures of eagles, etc., used for offerings on the shrine, were *basket shields*. This identification furnishes a clue to the explanation of many basket patterns. The so-called Navaho marriage basket, with its "life-line," contains a conventionalized bird, made "alive" by the break in the design which thus determines it as a bird. It would seem, too, with this explanation in mind, that the identification of many of the Hopi bowl designs becomes comparatively easy.

PROGRESS IN ANTHROPOLOGY AT PEABODY MUSEUM, YALE UNIVERSITY

By GEORGE GRANT MACCURDY

In a review of anthropology at Yale University Museum as it is, one is unconsciously led to ask what it might have been had the late Prof. O. C. Marsh chosen that subject instead of paleontology for special research, and it once looked as if he might have done so. One of his earliest scientific papers, *Description of an Ancient Sepulchral Mound near Newark, Ohio*,¹ made its appearance in 1866, the year his official connection with Yale College began. The contents of that Ohio mound became the nucleus of an anthropological collection that has grown slowly but constantly ever since. But Professor Marsh soon became so absorbed in paleontological research that his interest in anthropology continued to manifest itself in collecting only. He had time neither to study the materials gathered nor to make a systematic exhibit of them.

The work of installation along definite lines was begun in the spring of 1899, soon after Professor Marsh's death. A series representing the Paleolithic period of Europe was the first to be taken up, the arrangement being in conformity with de Mortillet's system of relative chronology.² This was followed by the Swiss Lake-dwelling collection and an unusually fine Scandinavian neolithic series, the latter being classified in accordance with the latest work by Sophus Müller of Copenhagen.³

Last year was devoted to Egypt, Greenland, and Alaska. Judge Victor C. Barringer, during a long residence in Egypt, made a large collection of antiquities which were first deposited in the Metropolitan Museum of Art, New York City, and later (1890) were bought for the Yale Museum. Part of this collection, with the recent annual accessions from the Egypt Exploration Fund, have been placed on exhibition. For the Greenland exhibit the Museum

¹*American Journal of Science*, vol. 42, pp. 1-11.

²*Le Préhistorique*, Paris, 1900.

³*Nordische Alterthumskunde*, Strassburg, 1897.

is indebted to Mr Benjamin Hoppin, Yale '72. One of its features is a mounted Eskimo figure, prepared by Mr H. W. Hendley, under the supervision of Prof. W. H. Holmes, of the United States National Museum. The most prominent features of the Alaskan exhibit are two large wooden totemic figures, one of a bear from the ridge-pole of a Tongass dwelling, and the other of a raven, heron, or kingfisher which marked the site of a Tongass shaman's grave. They were given to the Museum by Dr Wesley R. Coe, of Yale, who collected them while a member of the Harri-man Alaska Expedition. These exhibits, together with a considerable amount of miscellaneous labeling, represent what was accomplished in the way of installation during the three years ending June 30, 1902.

But the chief purpose of this paper is to record the progress of anthropology at the Museum since last June. This progress has been along the line (1) of accessions, including field-work, and (2) of installations. The accessions come under the head of purchases, gifts, and loan collections. Some field work was done in two different parts of the state. Through information furnished by the Reverend Heber H. Beadle, of Bridgeton, New Jersey, an archeological reconnoissance of a portion of the Farmington river valley, lying to the north and to the south of New Hartford, was undertaken early in the autumn. There are outcrops of a rather coarse, fibrous steatite or soapstone on the farms of Henry C. Butler, Lucas H. Mason, and G. C. Beckwith, in the Nepaug valley, about three miles south of New Hartford. Mr Mason, who acted as our guide, had recently found a number of worked blocks of soapstone, one of which had been transported and set up in front of his house. This latter measures between three and four feet long, a foot or more wide, and somewhat less than two feet in height, with deep, parallel, transverse incisions and the beginnings of one or two longitudinal grooves. These were evidently the first steps toward blocking out soapstone vessels.

On the stone wall in front of Mr Butler's farmhouse there is another, somewhat smaller, block of carved steatite, which was found on the ridge to the east of the farmhouse and not far from where the block mentioned above came. This is the rough draft of

a statue. On the head, which is slightly differentiated from the body by a circumferential groove, there are traces of human features—eyes, nose, mouth, and chin—produced by simple engraving. When doubt was expressed as to the authenticity of these scratches, Mr Mason emphatically asserted that they were found on the block when it was uncovered.

Mr Mason recently exposed the worked surface of either a soapstone boulder or outcrop near the top of the ridge already mentioned, and not far from the southern boundary of land belonging to Mr Butler. The quarries of the Connecticut Asbestos Mining Company are located on the same tract of land.

Two visits were made to the Nepaug locality, the first in company with Prof. C. E. Beecher and Dr Geo. F. Eaton, both of Yale University Museum, and the second in company with Dr Eaton only. Mr Mason, who was our guide the second time also, took us to a soapstone ledge which he discovered last spring on the land of Mr Beckwith. This ledge lies just west of a little stream which separates it from the ridge where the carved blocks of soapstone were found, and which flows in a southerly direction for about a mile, emptying into the Nepaug after crossing the Collinsville road just above Mr Beckwith's house. The outcrop has an almost north-and-south strike, and a dip of about 45° to the west. Its southern projection is completely denuded, and stands ten or twelve feet above the surrounding level. To the northward it disappears beneath a rising surface. The deposit has a laminated structure, and that the aboriginal workmen took advantage of this is seen in the flat-topped stumps or scars in the centers of bowl-shaped depressions which contained the incipient vessels until severed from the parent ledge. Two such markings were already exposed, and the upper portions of two more were visible above the layer of earth at the base of the ledge. Removing this layer we came upon a deposit of soapstone chippings reduced to the fineness of sawdust, buried in which were angular fragments of large quartzite pebbles. A depression in the top of the ledge, immediately to the north of its exposed portion, was partly filled with earth and leaves, and was apparently produced by the removal of many cubic yards of the soapstone. Displacing this earth-covering, we soon exposed half

a dozen vessel-scars of various shapes and sizes. Mr Beckwith has promised to protect the ledge as long as it remains in his possession. We found no vessels at that point, but were so fortunate as to secure a perfect one, which had been discovered about a foot below the bed of a small brook by R. R. Royce, a workman in the employ of Mr Beckwith, while excavating for a milk-house. The spot where the vessel was found is not more than a mile from the ledge.

Steatite ledges and boulders also occur some two or three miles north of New Hartford, and near the village of Pleasant Valley. Walter E. Manchester, of Pleasant Valley, conducted us to a large worked boulder by the roadside, a short distance south of the village green. He also took us to a rock-shelter, which had been discovered two years ago by F. J. Daniels, within the town limits of Barkhamsted, on land belonging to Alvin Stewart. This shelter, which is formed by an outcrop of gneiss, is on the southern slope of a high hill, and faces the south. Its floor was excavated to a depth of twenty inches or more by Mr Manchester, who found several hundred specimens, many of them broken, consisting chiefly of fragments of soapstone dishes, stone implements used in quarrying soapstone, drills, arrowpoints, pottery fragments of both plain and decorated ware, broken deer bones, and charcoal. Mr Manchester has given the entire collection to the Yale Museum. There is a thin seam of steatite which outcrops in the shelter where the floor and ceiling meet, but it was probably not thick enough to admit of profitable exploitation. It is about half a mile from the shelter to the nearest outcrops of steatite in any considerable quantity, although there are plenty of drift boulders of steatite not more than a hundred yards away.

A rock-shelter in another part of Connecticut was also visited, this time in company with Mr Alfred E. Hammer, of Branford. The shelter is less than a mile southwest of North Guilford, and the discovery that it contained Indian antiquities was made by Mr Lane while seeking cover there from a heavy rain-storm. Mr Lane's attention was first attracted to the blackness of the earth beneath his feet, and the thought occurred to him of transporting it to enrich his flower-beds. In ascertaining the depth of the black deposit he turned up flint implements. A later and somewhat

thorough exploitation of the shelter netted results in the uncovering by Mr Lane of six or seven hundred stone implements, most of which are now in Mr Hammer's private collection. No pottery was found. The shelter is formed in and under a bed of coarse sandstone conglomerate with a very gentle dip to the east and a north-and-south strike. It is perfectly dry and commodious, being from one hundred and fifty to two hundred feet long, five to fourteen feet high, and with an average depth of about ten feet. It faces westward, of course, and looks through woodland out upon a brook of clear, cold water not more than fifty yards away. An old Indian trail passes within a few feet of its northern extremity.

It will be possible to enumerate only the more important accessions received since last June :

The Misses Terry, of New Haven, have deposited in the Museum an elaborate beaded ceremonial shirt of buckskin, presented to their brother, General Alfred H. Terry, by a Sioux chief.

This year's annual gift of Egyptian antiquities from the " Egypt Exploration Fund " comes from two well-known localities, Abydos and Fayum, and will soon be added to the previous gifts from the Fund already on exhibition. One hundred flint implements belong to the prehistoric period ; the other objects from Abydos range in point of historic sequence from the first to the thirtieth dynasty. The series from Fayum belong to the Græco-Roman period.

Mrs Kate Foote Coe and her sister, Mrs E. H. Jenkins, of New Haven, have given two valuable Chilcat blankets. Both blankets were collected in 1886 by Mrs Coe, one being obtained from a receptacle in the top of a totem pole on the island of Killisnoo, southern Alaska. When found it was wrapped about the bones and ashes of a cremated body. In addition Mrs Coe and Mrs Jenkins have lent to the Museum nine baskets : one Japanese from the island of Nippon, the others from Alaska and California Indian tribes.

The most important accession of recent years is the loan collection of Indian basketry and other ethnological specimens belonging to Mr and Mrs William Hamilton Moseley, of New Haven. Mr and Mrs Moseley began collecting on one of their early visits to the far west, and have since traveled extensively in western United States and

in Mexico, British Columbia, and Alaska. Some of their specimens were obtained for them through trained ethnologists; the result is a collection of unusual scientific value, representing almost every basket-making tribe from the Aleutian islands to Tehuantepec, besides many tribes of the interior. Nor was their collecting limited wholly to basketry, although more than two hundred of the three hundred specimens come under that head. A majority of objects other than baskets are from Alaska. Among these, two Chilcat blankets and a war knife deserve special mention. One of the blankets and the war knife were obtained for Mr and Mrs Moseley by Lieut. G. T. Emmons. The Moseley collection is already installed in new and suitable cases.

This represents in outline the recent progress of anthropology at the Yale Museum—progress made without the aid of any fund whatever. Even a small fund could be made to go far toward defraying the necessary expenses of care and maintenance, encouraging at the same time new gifts and loans of specimens. A larger fund would render possible the harmonious development of the whole collection by enabling the curator to conduct field explorations and, as exceptional opportunities occur, to make purchases of specimens. As long as he lived Professor Marsh spent his money freely toward increasing the anthropological collection. This financial support, which, of course, stopped with his death, no one else has assumed. Nevertheless, the annual accessions have increased in number since then. By accession is meant the number of specimens received at one time; it may be one, or it may be hundreds, and even thousands. During the four years ending with Professor Marsh's death there were 23 accessions to the anthropological collection. Within the four years that have since elapsed, there have been 63 accessions. In other words, almost as many accessions are received in one year now as were received in four years prior to 1899. There is every reason to suppose that, with a fund, or even with a regular patron, the increase would be much greater than it is. Under the circumstances, we can attribute the recent "Progress in Anthropology at Peabody Museum" to the gradual increase of general interest in the subject, an interest which, if properly fostered, will make itself felt even more in the future.

PARSEE RELIGIOUS CEREMONIAL OBJECTS IN THE NATIONAL MUSEUM

By I. M. CASANOWICZ

INTRODUCTION

The Division of Historic Religions in the United States National Museum has lately been enriched by the addition of a collection of objects, illustrating some of the Parsee beliefs and rites, which was brought by Dr Emily Brainard Ryder from Bombay, India. A few remarks on the Parsees and their religious tenets may precede the description of this collection.

The Parsees form a community of about 100,000, of which the greater part, about 90,000, is settled in India, chiefly in Bombay, the rest being scattered here and there in Persia. They derive their name from the province of Pars, or Fars, broadly employed for Persia in general, from which country they migrated after its overthrow by the Arabs 641 A. D.

Their faith, which was for centuries previous to the Mohammedan conquest the state and national religion of Persia, is based on the teachings of Zoroaster (Zarathustra) who, according to the most reliable tradition, flourished in Bactria¹ between the middle of the seventh and beginning of the sixth centuries B. C.²

The substance of the Parsee creed is this: There is one supreme God, Ormuzd (Ahura Mazda), creator and ruler of the universe, author of all good. Associated with him in the government of the world are seven subordinate spirits, the Amshaspands (Amesha-Spentas), or archangels. Opposed to these powers of good is Ahriman (Angra-Mainyus) at the head of the malevolent spirits, the cause of all that is evil and noxious in the world. The conflict between these primeval causes of light and darkness, of good and evil, has been going on since the beginning of time and their

¹ About corresponding to the modern Balkh in Afghanistan.

² Compare A. V. William Jackson, *Zoroaster the Prophet of Ancient Iran*, New York, 1899, pp. 14, 174, 205-225.

influence pervades the whole universe, but will end in the triumph of the good over the evil.¹

The Parsees believe in the immortality of the soul, the resurrection of the body, and a last judgment.

The moral teachings of the Parsees are comprised in the triad of pure thoughts, pure words, and pure actions (*Humata, Hukhta, and Hvarshata*). The virtues inculcated in particular are purity alike of body and soul, truthfulness and uprightness, charity and benevolence, the destruction of noxious creatures and the care of useful animals, and the keeping pure of fire, water, earth, and the air as the beneficent creations of Ormuzd.

The sacred scriptures of the Parsees are contained in the Avesta, or Zend Avesta, in which the following main divisions are distinguished :

1. *Yasna*, the chief liturgical work, and the oldest and most sacred part of the Avesta, including, as it does, the Gathas, hymns, or psalms composed in an older dialect and derived from the sayings or sermons of Zoroaster himself.

2. *Visparad*, containing minor litanies, invocations to the various chiefs of the spiritual and terrestrial creation.

3. *Yashts*, invocations and hymns to the ancient Iranian divinities and heroes.

4. *Khorda Avesta*, or Minor Avesta, comprising minor liturgical texts, as the Nyaishes and Gahs, or the five daily prayers, the Afringans, or benedictions, etc., a kind of extract from the Avesta for laymen.

5. *Vendidad*, a code of religious and civil laws and precepts, a kind of Parsee Pentateuch.²

¹ The Parsees protest against the imputation of dualism, *i. e.*, the doctrine of two original independent spirits, one good and the other bad, to their theological system. The primeval principles of good and evil (*Vohumano* and *Akemmano*, or Spenta-Mainyus and Angra-Mainyus), the Parsees claim, were, though opposed to each other, united in every existing being, even in Ahura Mazda himself, and by their union produced the world of material things and of spiritual existences. Compare Karaka, *History of the Parsis*, London, 1884, 2, 187; also Martin Haug, *Essays on the Sacred Language, Writings and Religion of the Parsees*, Bombay, 1862, p. 258.

² The present Avesta, which equals perhaps one-tenth of the Bible in extent, is believed to be but a small remnant of the original Zoroastrian sacred literature which was lost during the invasions of Persia by Alexander the Great (330 B. C.) and the Arabs (641 A. D.). According to the Arabian chronicler Tabari (died 923) the Persian sacred scriptures were inscribed on twelve thousand cowhides, and Hermippos, a Greek philosopher of the third century B. C., credits Zoroaster with the composition of two million verses.



(Plate XII, figure 1. Museum number 216,053.) The sacred fire and everything that is connected with it must not come in contact with anything that may contaminate it. A ladle is therefore used for taking up the wood chips offered for the urn.

3. *Fire tongs*.—Made of brass and nickel-plated. Length, $13\frac{1}{2}$ in. (Plate XII, figure 3. Museum number 216,052.) Used for picking up the wood chips for the sacred fire, which would be defiled if touched with the hands.

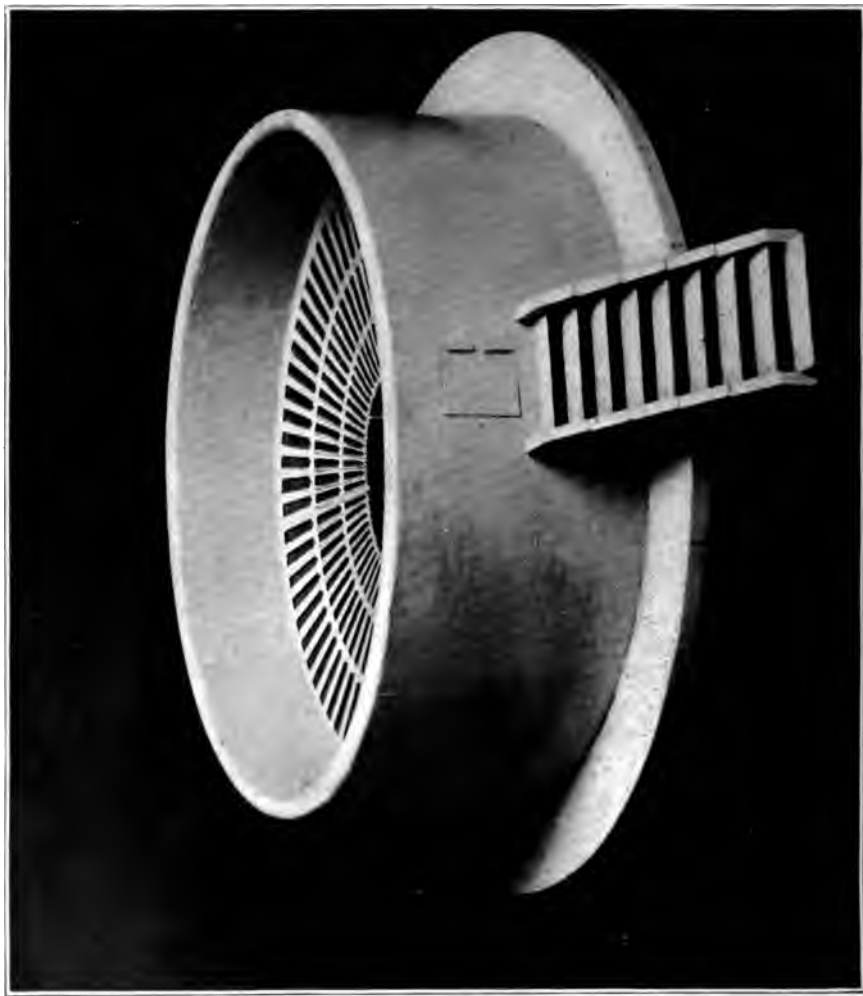
4. *Offering tray*.—Made of brass and nickel-plated. Diameter, $17\frac{3}{4}$ in.; depth, $1\frac{1}{2}$ in. (Plate XII, figure 4. Museum number 216,054.) The Parsees have a kind of sacred meal in honor either of the dead or the guardian angels. Fruits and flowers are spread on a metal tray or on plantain leaves, while glasses are filled with fresh milk, pure water, wine, and sherbet. A priest recites the prayers called *Afringans*, which are either expressive of remembrance of the dead or which invoke the aid of the angel in whose honor the meal was prepared. After this consecration, which only a priest may perform, the meal is partaken by the invited guests.¹

5. *Tray*.—Made of brass and nickel-plated. Diameter, $12\frac{1}{2}$ in.; depth, $1\frac{5}{8}$ in. (Museum number 216,055.)

6. *Religious Costume*.—(Museum number 216,056.) This consists of (a) an ample double-breasted coat of cotton, reaching to the ankles, called *jama*; (b) a belt, called *pichori*, made of cotton, about one yard wide and several yards in length, which is folded once and passed round the waist as many times as its length will admit; (c) loose cotton trousers; (d) a pair of cotton gloves, and (e) a kind of turban of brown figured silk. This costume is used by the Parsees on formal and solemn occasions. The dress of the priests is the same, only that the head-gear is likewise of white cloth.

7. *Tower of Silence*.—Model made of wood. Height, 18 in.; diameter, 28 in.; length of platform, 48 in.; width, 40 in. (Plate XIII. Museum No. 215,412.) In agreement with the Zoroastrian doctrine that the four elements — water, fire, air, and earth, as the good creations of Ormuzd, should be maintained pure and undefiled, the Parsees neither burn nor bury their dead, nor do they consign them to water, but allow them to pass over into another living body by ex-

¹ Compare Haug, op. cit., p. 199; Karaka, *History of the Parsis*, p. 171.



MODEL OF THE TOWER OF SILENCE IN THE NATIONAL MUSEUM
(Cat. No. 215412.)

posing them on mountain heights, on so-called "towers of silence" (*dakhma*), to be consumed by vultures. The tower of silence is a circular structure of stone, plastered with lime, from 60 to 90 feet in diameter and from 20 to 30 feet in height, open at the top, otherwise resembling a gasometer. Inside is a circular platform paved with large stone slabs, called *pavis*, upon which the bodies are laid. The *pavis* are ranged in three concentric rows, diminishing in size from the outer to the inner ring, the outer being reserved for men, the middle for women, and the inner for children. The corpse is deposited wrapped in clean white cloths, which, however, must be old and worn out in order to admit of ready destruction. The "heaven-sent" birds, which are always in the vicinity of the tower, swoop down upon the corpse as soon as it has been exposed, and it is said that it is quite stripped of flesh in an hour or two. In the center of the platform is a pit (*bhandar*), about 30 feet in diameter, from which four drains lead into four wells sunk in the ground outside of the tower. Into this pit the denuded bones are later deposited where, under the tropical sun, they soon crumble into dust and are then, with all other remaining matter, conducted through the drains to the wells. The drains are provided with disinfectants (charcoal and sandstones) to purify the matter before it enters the ground, so as to preserve the earth from pollution.

The principal towers of silence in use at present by the Parsee community of India are found on Malabar hill at Bombay.

PIMA ANNALS

By FRANK RUSSELL

In recent years the impression has been gaining ground that the majority of the American tribes kept mnemonic or pictographic records of events. The number (three) of chronologic records thus far published is comparatively very small and the number of references to others that have wholly disappeared is not much greater. I was therefore much interested in discovering that the Pimas of southern Arizona have long been accustomed to record events by means of notched sticks. Four sticks were "told" to me by the men in whose charge they were; to any other person they would have been absolutely meaningless. Chronologic sequence is subordinated to narrative, so that I have termed the records "annals" rather than calendars.

The sticks are without ornamentation. The years are marked by transverse notches; the events by smaller notches or rude symbols, each of which may mean many different things. In only one instance has a symbol come to have a conventional meaning — the T is used habitually by one annalist for the drinking festivals at which native liquor was formerly brewed at the harvest season; these were known to the whites by the name of "tizwin drunks." The saguaro cactus harvest marked the beginning of the year; in a land without winters we could not expect to find a "winter count." This also coincided with the maize and mesquite harvest and the onset of the torrid heat of summer.

The oldest of these annals date from the time of the meteoric shower of November 13, 1833, as do the oldest calendars among the Kiowa. Other older sticks are remembered by the old persons, but they have all been burned or otherwise destroyed.

The relative importance of the events is of some interest, so that I have tabulated them below. As usual with Amerindian records these contain much that is trivial and omit much that is important. The reasons for this have been adequately set forth by Mallery. We should also bear in mind the fact that the importance of an

event differs according as it is viewed by a Caucasian or an Amerindian eye.

Battles or skirmishes.....	66
Infrequent natural phenomena, eclipses, floods, earthquakes, etc.	14
Famines and years of abundance (only severe famines are noted)	5
Epidemics.....	11
Accidents, rattlesnake bites, lightning strokes, etc.....	13
Events relating to whites but not to Pimas.....	19
Relation with whites, building churches, schools, etc.....	21
Number of sorcerers killed, chiefly during epidemics.....	18
Changes of village sites (many changes not noted)	2
Races; relay, kicking-ball, horse.....	7
Festivals at which liquor was brewed.....	25
Trivial events including those of personal interest to the annalist	13
Number of persons killed during drinking bouts.....	24

As examples of the nature of these annals the following extracts are offered :

1833-34

During the moon preceding the meteoric shower the Yumas, armed with clubs, bows, and arrows, attacked the Maricopa village. The Yumas surprised the Maricopas and captured their women, whom they surrounded and tried to take away with them. They were about to cross the Gila with their captives when the Pimas arrived and attacked. The women took advantage of the confusion to escape into the chaparral. The Yumas fought bravely, but they were overpowered by numbers and few escaped to tell of their defeat.

In the early winter the meteoric shower took place. This event was followed by heavy rains that caused floods in the Gila and Salt rivers. The spectacle of falling stars was to the Pimas an augury of disaster and the speedy coming of floods was regarded as punishment for sins committed. What the sins might be they did not know, but concluded they must have offended some medicine-man who possessed great magic power. Many thought it must be the medicine-man Kakō who brought this calamity upon them, because they had not shown him the respect that he thought was due. It is said that when the flood was at its height he climbed a

cottonwood tree and thence proclaimed, in a loud voice, that he would perform certain miracles that would prove disastrous to them if they would not listen to him and show him respect.

Others declared that the floods were caused by the two sons of an old goddess Takwa-artam. When she saw the flood threatening to overwhelm the Pimas and Maricopas, she said to her sons, "Give me back my milk and then you can drown my people. The land is yet what it was when it was new." This puzzled the two brothers. They knew they could not return the milk that had nourished them in infancy, so they did not allow the flood to rise any higher but caused it to go down.

1836-37

At the beginning of this year the fruit of the saguaro was gathered and a large quantity of liquor prepared from it. All the men became intoxicated—too drunk to be on their guard against an attack from the Apaches. Early in the morning a woman started toward the hills to gather cactus fruit. She had not gone far when she saw a man mount a horse and start toward her. She suspected danger and walked backward for some distance before turning to flee. She got half way to the village before she was overtaken by the Apache, with whom she struggled so desperately as to raise a cloud of dust. Those who were somewhat sober hastened toward the place, but were too late to rescue the woman from being roped and dragged to death. However, they overtook the party of Apaches and killed five of them. On examining the dead Apaches it was found that their bodies were protected with rawhide armor; then the Pimas understood why their arrows had glanced off or jumped back.

1857-58

In the summer the Yumas came again, accompanied by the Mohaves. They sent scouts ahead who found the Maricopa women gathering mesquite beans. They killed all the women except one whom they kept to act as guide. She was the sister of a well-known Maricopa warrior and they compelled her to lead them to her brother's home. When they reached it she was killed with a club and the man was chased, but he was as good a runner as he

was a fighter, and they could not catch him. A Yuma told him to stop and die like a man, but he answered that if they could overtake him he would show them how to die like a man. The Maricopas fled from their village and the Yumas burned it. Messengers went to all the villages that day and under cover of the night the Pimas and Maricopas gathered; they kept coming until late the next forenoon. They found the Yumas encamped near the river at a spot where they had assaulted some women and a Pima had been killed while defending them. The Yumas had spent the night in singing their war-songs. Now and again a medicine-man would come forward to puff whiffs of smoke in order that their cause might find favor with the gods. The Pima-Maricopa council ended about noon, and it was decided to surround the Yumas and make special effort to prevent them from reaching the river to obtain water. Formed in a semicircle the Pimas and Maricopas shot down the Yumas on three sides. Soon the Yumas began to waver and become exhausted from thirst in the heat of the day. They made several attempts to break through the line, but failed, and finally gathered in a compact body to make a last attempt to reach the river. At that moment the Pimas and Maricopas who were on horseback rushed in upon the enemy and rode them down. After a hand-to-hand combat the Yumas were all killed except one who was stunned by the blow of a club and lay unconscious under a heap of dead. During the night he recovered his senses and escaped. This was the bloodiest fight known and the Yumas came here to fight no more.

The annals elsewhere narrate in detail the methods of fighting, which were quite unlike those in vogue among most tribes. The courage of both sides in the above described contest was of course sustained by their belief in magic power. Like oriental religious fanatics they felt themselves imbued with superhuman strength. The number killed, variously estimated by whites at from four to six hundred, shows how important was the engagement.

1881-82

The Pima police were sent from Sacaton to arrest some Kwahadk living at their village about fifty miles south of the agency. The

Kwahadk had been drinking tizwin, and as they had never been interfered with for this by the agent, they were not conscious of having transgressed any laws. Furthermore, drunkenness was the rule among the few whites with whom they had come in contact and it was a privilege the Kwahadk indulged in but once or twice a year. Old inhabitants at Sacaton tell me that the agent was working prisoners on a reservation farm and selling the crop for his own profit. The Pimas had been committing no misdemeanors or crimes that offered any excuse for imprisoning them, and the crops needed attention. He therefore ordered the police to bring in the Kwahadk dead or alive. One of the young Kwahadk frankly declared his innocence of any intentional transgressions and defied the police to take him from his home. He was promptly shot. As the police were returning to Sacaton they were overtaken by the father of the murdered man, who told them that he had nothing to live for since they had killed his son and they might as well kill him too. They obligingly complied with his request.

THE GROWTH OF BOYS: CORRELATIONS FOR THE ANNUAL INCREMENTS

By CLARK WISSLER

The real problem in studies of growth is the determination of the annual increments during the period of growth for each degree of adult stature. Until we have sufficient measurements to tell us how the tall men and likewise the short men grew in boyhood, we can form no idea of the significance of any given part of the growing period. Thus far our knowledge of growth, as determined by physical measurements of children, is based on average statures obtained by single measurements of large groups of children. We thus gain a certain general curve of growth from which we infer certain tendencies to periodic growth. In all such measurements we have ample means for determining the variation between individuals at each period of life, but no way of estimating the degree of variation in the same individual from year to year. Thus, while we know that the average maximum increase in the stature of boys occurs about the fourteenth year of life, we have no means of knowing how many boys reach their maximum before or after this point. Further, we have no data from which to infer the influence of rapid growth in one year of life on the rate of growth in later years and on the final adult stature. It is generally assumed that the curve of growth obtained from mass measurements is typical of individual growth and that the individual curves will be the same whether the pubertal maximum period of growth comes before or after the fourteenth year. A few life-records of individual children published from time to time suggest the invalidity of this assumption, but aside from these few isolated cases there are no data to which appeal can be made. In consequence, any series of annual measurements of a considerable number of children during the period of pubertal changes must be an important contribution to our knowledge. Recently there came into my hands the gymnasium rec-

ords¹ of a private school for boys from which the annual increments for the various physical measurements could be determined. Boys attended this school between the ages of eleven and eighteen, some being regular attendants for eight consecutive years, a few for a period of nine to ten years, while the majority were in attendance from four to five consecutive years between the eleventh and seventeenth years of life. There were in all about 300 individuals, making something more than 1500 annual measurements. While this is a fair number of cases, irregularities in age of entrance and of leaving school reduce the number of cases to such a degree that the comparison of annual increments for three-, four-, and five-year intervals becomes difficult. In other words, the number of boys presenting an unbroken series of annual measurements for periods of six years or more is relatively small — too small, in fact, to lead to safe conclusions unless extremely uniform results are obtained. Yet this is precisely the way the results turn out.

Although a considerable number of gymnasium measurements were taken — stature, weight, arm-reach, height sitting, length of sternum, etc., the following results are for stature and weight only. The reason for such selection is rather obvious, since they are the two general indices of growth. Stature was recorded in centimeters, reading to the nearest unit, and weight in kilograms, reading to tenths. The latter is sufficiently exact for the purpose; but it would have been more precise to have taken stature in millimeters, since the annual increment may often be less than a centimeter. Ages were counted to the nearest birthday. This rounding off of stature and ages makes the comparison of annual increments somewhat uncertain because arbitrary, but the usual method of recording gymnasium measurements makes it impossible to do otherwise.

As stated at the outset, the interesting problem is the correlation of increments; but it seems desirable to mention some preliminary data before proceeding. For these measurements the maximum rate of annual increase for stature, arm-reach, and weight is found

¹ These were secured through the kindness of Dr Franz Boas and the calculations were made at his suggestion. The writer is so greatly indebted to him for suggestions and criticisms that he is unable to designate his own particular contribution to the research. It is, however, fair to say that the writer is alone responsible for all computations and interpretations herein reported.

between the ages of 14 and 15, but the decrease for later years is less in case of weight than the other measurements.

Another preliminary point is the degree of correlation between the annual increments for the different measurements. Calculating the correlation by the Pearson formula, we have the following:¹

Age interval	12-13	13-14	14-15	15-16
Increment for stature and weight	+ 0.70	+ 0.75	+ 0.50	+ 0.60
Increment for stature and arm-reach	+ 0.72	+ 0.92	+ 0.73	+ 0.95

From this it appears that there is a close correlation between the rates of growth for these bodily dimensions, and that with respect to them the body grows with considerable uniformity and by parts regularly.

We are now ready to inquire as to the correlation of annual increments and will state the results at once. If we correlate the absolute stature with the absolute increment for the following year, the weight with its increment, and likewise the arm-reach, the following coefficients of correlation are obtained:

Ages	12	13	14	15
Stature and increment	+ 0.41	+ 0.30	- 0.30	- 0.51
Weight " "	+ 0.35	+ 0.35	+ 0.11	- 0.27
Arm-reach and "		+ 0.36	- 0.33	- 0.32

The number of cases for each correlation varies from 126 to 199.

The important point in this table is the change of sign of the coefficient of correlation between the years of 13 and 14. The change is quite abrupt in stature and arm-reach. While the sign of the coefficient for weight in the fourteenth year is positive, the coefficient itself is very small. The probable interpretation of this is that the change of sign occurs half a year later than in the case of stature. The simpler statement of this technical fact would be that, in case of stature, the boys who were tall at 12 years grow the faster during the interval 12-13 and 13-14; but during the

¹ The general method of correlation need not be explained here. It is necessary only to know that the degree of correlation is expressed in a scale of + 1.00 to - 1.00. The former signifies a perfect direct correlation, the latter a perfect inverse correlation, and the intermediate zero no correlation whatever. The degree of correlation in the above can be read into this scale according to the decimal.

intervals of 14-15 and 15-16 they grow slowly; with the boys of short stature at 12 the rates of growth are exactly the reverse. This means that there is a marked tendency for boys growing rapidly at 12 to continue to the year of the pubertal maximum, while those growing slowly at 12 continue on about the same level until near that point, when they in turn begin to grow rapidly. What is true of stature is likewise true of other measurements.

While the above is in some respects a correlation between size and annual increment, the same compensating relation holds for the successive annual increments. It also appears that the annual increments afford greater opportunity for correlation than the increments and size, since we can readily correlate across large and small age intervals. This may be seen from what follows.

The data at hand furnished records of seventy boys, complete between the ages of 12 and 17. With these the correlations between all the annual increments have been calculated for stature and weight.

CORRELATION OF THE ANNUAL INCREMENTS OF STATURE

Ages.	12-13	13-14	14-15	15-16	16-17
12-13	+1.00	+0.45	-0.02	-0.62	-0.70
13-14	+0.45	+1.00	-0.04	-0.56	-0.66
14-15	-0.02	-0.04	+1.00	+0.43	-0.03
15-16	-0.62	-0.56	+0.43	+1.00	+0.61
16-17	-0.70	-0.66	-0.03	+0.61	+1.00

CORRELATION OF THE ANNUAL INCREMENTS OF WEIGHT

Ages.	12-13	13-14	14-15	15-16	16-17
12-13	+1.00	+0.39	-0.05	-0.43	-0.41
13-14	+0.39	+1.00	+0.09	-0.36	-0.31
14-15	-0.05	+0.09	+1.00	+0.03	+0.01
15-16	-0.43	-0.36	+0.03	+1.00	+0.33
16-17	-0.41	-0.31	+0.01	+0.33	+1.00

The average increments for the various intervals and their respective variabilities may be seen from the following table :

AVERAGE INCREMENTS AND VARIABILITIES

Age Interval.	Cases.	Av. Increment of Stature; <i>mm.</i>	Variability; <i>mm.</i>	Av. Increment of Weight; <i>kg.</i>	Variability; <i>kg.</i>
11-12	123	48	16	3.4	2.0
12-13	163	56	21	4.0	2.5
13-14	198	64	23	5.2	2.2
14-15	176	69	26	5.9	2.2
15-16	134	53	28	5.4	2.9
16-17	76	32	20	4.3	2.0
17-18	33	23	23	3.2	1.7

In reading the table it must be understood that 1.00 is the correlation of the increment with itself or identity. In case of the increment of stature for 12-13, for example, its correlation with itself falls in the first column, its correlation with the increment for the year 13-14 in the second column, etc. This row of coefficients gives us a picture, or curve of growth, applicable to boys of 12-13. Whatever the relative increment for that year, we can be reasonably certain that it will persist unchanged during 13-14, that a marked change will occur in 14-15, and that the subsequent years will be marked by an inverse relative increment. The relation is plain when the table for weight is reduced to graphic form as in figure 3.

In the curves for weight the crossing point falls on the zero line in the 14-15 year and the whole curve for the annual increment 14-15 is approximately in the zero line. The same is practically true of stature. The meaning of this is that, given the annual increment of a boy for the year 14-15, absolutely nothing can be inferred as to his past or future rate of growth. The increment for that year is apparently functionally independent of all other increments, bearing only a chance relation to them. That such must be the case is evident from the mere fact that the sign of correlation changes; there must be a point somewhere where there is no correlation whatsoever. To see just what this means in case of a growing boy is not clear. It is probable that the result is due to a compensation, in that those who have been growing rapidly will now slow down irregularly, and likewise those who were growing

slowly will begin to spurt at irregular intervals. The result of such a condition would be that just as many boys of a given increment at 13-14 would grow fast in 14-15 as slow, and the reverse, which is equivalent to a chance relation. Yet the maximum rate of growth occurs somewhere between 13-14 and 14-15—the "spurt," as it is often called. This spurt may come from causes independent of the conditions that determine the compensation of

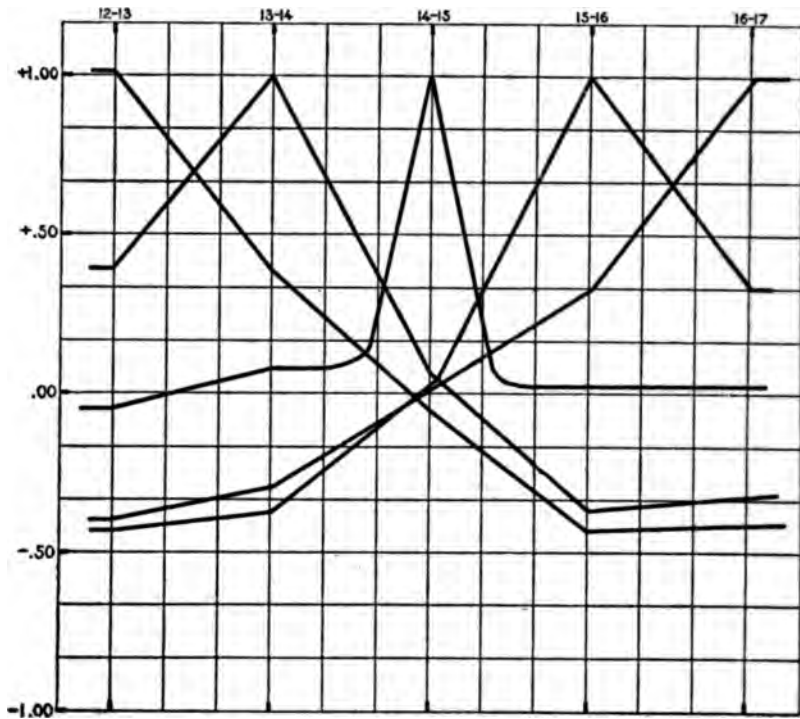


FIG. 3.—Curves showing the relative degrees of correlation for increments of weight.

rates of growth before and after puberty. There seems good reason for such an assumption. If this is correct, the utter lack of correlation for 14-15 is accounted for very satisfactorily. The boys who grew slowly before that time lived under conditions less favorable to growth and the pubertal spurt met with less resistance in them. However, it is well-nigh useless to speculate in this manner because the absolute stature is a complex resultant

of heredity, environment, accident, etc. The important fact is that there is a compensatory relation of growth between the pre-pubertial and the post-pubertial rates of growth and that the period of the pubertial maximum is a time of readjustment with respect to annual increments.

The reader may wish to know the result if intervals of more than one year are correlated. If, for example, the increment 12-13 were correlated with 13-16, what would be the coefficient? Calculation is unnecessary, for the curves show what it must be. The correlations for the annual increments for this period are: $+0.45$, -0.02 , -0.62 . The summation of these is slightly negative, which must be the approximate correlation for the whole interval. The tables are thus a complete exposition of all the possible correlations, and so tell the whole story. It is unfortunate that these measurements do not cover the period of 10-12. There were about 30 boys of 11 years from which it is possible to gain some idea of the interval 11-12. In case of 11-12 and 12-16 the indications are for a low degree of correlation. This is consistent, for we have just found that 12-13 and 13-16 are negative. In case of 11-12 and 12-16 we are choosing an increment for a symmetrical interval in relation to the period of change of sign, or the pubertial maximum. Here the compensation in growing rates would tend to no correlation. But the correlation 12-13 and 13-16 gives an interval unequally adjusted to the pubertial maximum. Thus it appears that if we correlate the increment for any interval with the increment for an interval of equal extent on either side of the pubertial maximum, no correlation will appear.

We have now reached another point. It must follow from all that has gone before that there is no correlation between the absolute stature at 12 and the absolute increment for 12-16. For 68 cases a coefficient of -0.06 was obtained. This again could have been answered from the tables, for the change of sign must mean that the tall boys at 12 grow slowly after 14, and the reverse, and the compensation should equalize the result. In other words, the average increment of stature for 12-16 is the same for tall as for short boys. But there is still another important point. The tall boys at 12 are also the tall boys at 16. The correlations as

calculated for the absolute statures are, 12-14, + 0.94; 12-16, + 0.97. This may signify one of two relations: the short boys before 14 get their final stature much later in life, or short men are those who were short at 12 and grew slowly before 14.

For light on this point I took the seven tallest boys at 17 and the seven shortest. These were then traced back and the median increments found for the different years. In like manner the fifteen tallest and shortest at 12 years. The results show that tall boys at either end of the series are those who grew most rapidly before 14. Nor will reducing all individual increments to percentages of statures modify the result, which is the same absolutely or relatively. Other examples of this relation may be observed in the life-records of stature so far available.¹ It is of course probable that the short boys at 17 may still grow enough to overtake the others.

With respect to the whole paper a general objection may be made. It may be said that these boys are artificially selected by the school and that in consequence the relations are not true for boys in general. There is reason to believe that selection may be a factor here. For example, when we trace the 12-year-old boys through the records, it appears that of the fifteen tallest boys of that age all are in school at 16, while among the 17-year-olds only four of them are enrolled; of the fifteen shortest boys nine are in school at 17 and five at 18, none of the taller group remaining after the age of 17. From this it appears that the older boys of the school are inclined to be short in stature. But this condition does not make its appearance until the fifteenth year, and it will be remembered that the compensating rates of correlation were found between the ages of 12 and 16. This factor is then a probable intensifier of the result, but not the cause.

The general significance of the preceding results emanates from their relation to the problem of relative maturity. It appears that the tall boys at 12 are relatively more mature and that they continue so until near manhood. No doubt this relative physical maturity has given rise to false theories concerning the functional relation of mental and physical development. The results, at least, show the importance of procuring a complete series of measurements extending to full maturity.

¹ *Jahrb. f. Kinderheilkunde*, 1893.

PHYSICAL ANTHROPOLOGY OF THE JEWS II.—PIGMENTATION

By MAURICE FISHBERG

The color of the skin, hair, and eyes is a very important racial trait. Whether pigmentation is a fixed trait—that is, a racial characteristic transmitted by heredity—or is influenced to any extent by climate, altitude, nutrition, and social condition, is a question on which anthropologists are not agreed. The modern school of sociologists have collected considerable evidence tending to show that the phenomena of pigmentation are greatly influenced by climate, etc., while many others adduce strong evidence to the contrary.¹ In our study of the anthropology of the Jews this is of great importance. If it can be shown that the color of hair and eyes is altered under varying external conditions, irrespective of heredity, we may have a ready explanation of the high percentage of blond hair and blue eyes among the Jews. On the other hand, if pigmentation is an hereditary racial trait, the 12 percent of less pigmented Jews must have had their origin in an infusion of non-Semitic, probably Aryan, blood.

The type of the Jew is dark. The ancient Hebrews were characterized as having dark hair. The ideal beauty of Semites has been "raven black" hair. Jacobs quotes a Mishnic Rabbi, R. Ishmael, who says: "The sons of Israel are like boxwood, neither black nor white but between the two"—*i. e.*, of olive color. The Talmud appears to use the term black (*shachar*) as synonymous with both hair and youth. There is no mention in the Bible nor in the Talmud of the color of the eyes of the ancient Hebrews; but it must be mentioned that, according to some authorities on the Hebrew language, there is no equivalent of "blue" in the Bible or the Talmud.

We have made notes on the color of the skin, hair, and eyes of 2272 Jews, of twenty years or older, in New York City. Of these

¹ For an excellent summary of the subject see W. Z. Ripley, *Races of Europe*, N. Y., 1899, chap. IV.

1188 were men and 1084 women. By far the larger portion of these people are of foreign birth — immigrants from nearly every European country and some from various parts of Asia and Africa. Following the plan adopted in treating of the cephalic index,¹ we will here report our results for all the Jews, leaving the consideration of the differences between the Jews in various countries to a future special article on the subject.

Besides the color of hair and eyes, we have made observations on grayness, baldness, and freckles, and also on the variety of the hair.

As will readily be observed by one who attempts to distinguish the degrees of pigmentation of skin, hair and eyes, there is often considerable difficulty in deciding which color to assign a given individual. It is quite easy to distinguish golden-blond from black or dark-brown hair; but between these two extremes there are found minor gradations which are not easily separated, and one often remains in doubt as to the class with which he is dealing. There also arises a problem concerning the number of colors into which it is advisable to divide the material. Some anthropologists distinguish as many as fifteen colors of skin, hair, or eyes; while the late Dr R. Virchow, in his classical elaboration of the material on the color of skin, hair, and eyes of German school children, collected by the German Anthropological Society² distinguishes only two colors for the skin (fair and dark), four for the hair (blond, brown, black, and red), and three for the eyes (blue, gray, and brown). This classification we have adopted with only slight modifications; we distinguish six classes of hair coloration — black, brown, chestnut, light chestnut, blond, and red.

The distinction between fair and dark skin is not always readily apparent, and in doubtful cases we have been guided by the general impression gained by a careful inspection at a distance of from one to two meters from the individual. Only those whose skin appeared brownish or swarthy were taken as dark, and those having a yellowish or somewhat muddy tint were regarded as fair.

¹ See the last number of this journal, pages 684-706.

² "Gesamtbericht über die von der deutschen anthropologischen Gesellschaft veranlassten Erhebungen über die Farbe der Haut, der Haare und der Augen der Schulkinder in Deutschland," *Archiv für Anthropologie*, xvi, pp. 275-475.

The hair was considered black when the darkness was very deep, without a brownish tinge. Such hair usually has a luster which by reflected light gives it a bluish appearance, but this luster is not observable in black hair which is not kept scrupulously clean by frequent brushing.

Brown hair was considered to be that which, although fairly dark, did not show a luster or, in a reflected light, presented a brownish tinge. It is sometimes difficult to distinguish this color from black, particularly in hair the care of which has been neglected. Quite often "brown" hair will appear decidedly black when thoroughly cleaned and brushed.

As chestnut we counted hair which by its coloration did not appear positively brown but which was not fair enough to be termed blond. As this class includes many gradations of color, we have found it necessary to divide it into dark and light chestnut. Most hair here considered to be light chestnut may sometimes be taken for blond, especially when seen by direct sunlight, but close observation discloses a dark tinge. Much of the hair included in this class shows a somewhat rufous appearance, without being decidedly red; in other instances it is almost flaxen, but with a dark tinge.

Under blond we have classed hair which is almost white, as well as the flaxen, ashen, yellowish, and golden blond hair. Some of these have a more or less grayish tinge, others are even slightly rufous, while still others have no decided color at all.

There are many shades of red hair, ranging from fire-red through brownish red to that which is almost blond but which has a decidedly rufous appearance. In doubtful cases we have been guided by other signs of erythrisms, such as an abundance of freckles, and, where possible, by noting the color of the pubic hair, which is orange yellow in most cases of erythrisms.

The color of the iris was observed at a distance of about one meter. Eyes showing the least degree of pigmentation were recorded as blue, but deeply pigmented eyes, with a dark bluish appearance on close observation, were not included in this class. Only eyes having no color at all or a mixture of light blue and gray were counted as blue.

All dark eyes which were not decidedly black were recorded as

brown. In this class are included the "beer-colored" eyes (very frequent among the eastern European Jews) and those having a deep dark tint which appears dark blue on close inspection. As gray were considered all eyes which could not be included in the above two classes ; it consequently includes most of those which some observers have described as green, although many of these are essentially brown. Such cases as the latter we have classed among the brown eyes. Black eyes are usually brown on close inspection, but at a distance of about a meter the iris appears deep black and shows no difference in the color of the pupil.

Of those investigated it is found that 269 Jews (22.64 percent) had dark skin and 919 (77.36 percent) had fair skin. Of the 1084 Jewesses, 276 (25.46 percent) had light skin and 808 (74.54 percent) had dark skin. This indicates that Jewesses have darker skin than Jews. According to Ploss and Bartels¹ the skin of women is usually fairer than that of men.

The distribution of the colors of the hair is shown in the following table :

TABLE I.—COLOR OF THE HAIR OF 2272 JEWS IN NEW YORK CITY

Color of the Hair	Jews		Jewesses	
	Number	Percent	Number	Percent
Black	546	45.95	474	43.72
Brown	291	24.49	286	26.39
Chestnut { Dark	155	13.05	109	10.06
{ Light	92	7.75	113	10.42
Blond	74	6.23	62	5.72
Red	30	2.53	40	3.69
Totals	1188	100.00	1084	100.00

Dividing the hair in three classes as dark, fair, and red, we find the proportions to be as follows :

TABLE II.—PERCENTAGE OF DARK AND FAIR HAIR AMONG JEWS

Color	Jews	Jewesses
Dark hair	83.49 percent	80.17 percent
Fair hair	13.98 percent	16.14 percent
Red hair	2.53 percent	3.69 percent

¹ *Das Weib*, 7. auflage, 1902, p. 26 ; see also Havelock Ellis, *Man and Woman*, London, 1895, pp. 223-230.

These figures show that over 80 percent of the hair of Jews is dark; they also indicate that the hair of Jewesses is fairer than that of Jews, which does not agree with the results obtained by other investigators of Jewish anthropology. Talko-Hryniewicz¹ found that among the Jews in Lithuania and Ukraine the percentage of dark hair in the women is 84 percent, while among the men it is only 60.3 percent. Light hair was found by him 16 percent in women and 39.7 percent in men. Weissenberg² also found that Jewesses are more brunette than the Jews, but his conclusions are based on only one hundred men and forty-one women. Yakowenko³ also determined that dark hair is more frequent among Jewesses than among Jews, only seven of the former out of one hundred having light hair. This authority remarks that black and dark brown hair is more common among women than among men, while blond hair is more frequent in men. Ripley⁴ has made use of this assertion regarding the greater darkness of Jewesses as one of the main arguments of his theory of social selection in man. Our observations, however, based on a large number of Jewish women, do not support this view.

In Poland Elkind has also found that the Jews are darker than the Jewesses, the former showing 96.81 percent with dark and 0.53 percent with fair hair, as against 86.4 percent of dark and 8.0 percent of fair hair.⁵

Statistics of the color of the eyes among the Jews investigated by us are presented in table III.

According to our figures more Jewesses (64.46 percent) than Jews (58.41 per cent) have dark eyes. Pure blue eyes also appear to be more frequent among the men (24.08 percent) than among the women (19.65 percent). On this point the observations of other

¹ Julian Talko-Hryniewicz, "Charakterystyka fizyczna ludności żydowskiej Litwy i Rusi," *Zbiór Wiadomości do antropologii Krajowej*, XVI, pp. 17-22, Krakow, 1892.

² S. Weissenberg, "Die südrussischen Juden," *Archiv für Anthropologie*, XXIII, p. 108 of reprint.

³ M. G. Yakowenko, *Materials for the Anthropology of the Jews* (in Russian), p. 152, St Petersburg, 1898.

⁴ *Races of Europe*, pp. 399-400, N. Y., 1899.

⁵ A. D. Elkind, "The Jews," *Publications of the Soc. of Friends of Natural Science*, etc. (in Russian), CIV, pp. 37-47, Moscow, 1903.

investigators agree with those of our own. Yakowenko¹ found 76 percent of Jewesses with dark eyes, and only 69 percent of Jews. Of Talko-Hryniewicz's 799 Jewesses, 61.8 percent had dark eyes; of his 869 Jews, only 56.5 percent had dark eyes.² The same has

TABLE III.—COLOR OF THE EYES IN 2272 JEWS

Color	Jews		Jewesses	
	Number	Percent	Number	Percent
Black	269	22.64	206	19.00
Brown	425	35.77	482	44.46
Blue	286	24.08	213	19.65
Gray	208	17.51	183	16.89
Totals	1188	100.00	1084	100.00

been observed by Weissenberg,³ who found 75.6 percent of dark eyes in Jewesses and only 64.8 percent in Jews.

Typical representatives of a race show a constant interrelation between the color of their hair and that of their eyes; for example, in the blond northern races their light hair is usually accompanied by blue eyes, while in the brunette races the dark hair is usually accompanied by brown eyes. Individuals who do not exhibit such interrelation, having dark eyes with fair hair, or the reverse, are considered as "mixed types." From the figures shown in tables I to IV we find that in men 86.02 percent had dark hair (including red in this group) and 58.41 percent had dark eyes. We would therefore expect to find that the combination of dark hair and dark eyes in the same individuals should occur according to the formula $86.02 \times 58.41 \div 100 = 50.24$ percent of the individuals observed. Fair types are expected on the same principle to occur in $(13.98 \times 41.59 \div 100 =) 5.81$ percent of Jews. In Jewesses those figures are expected to be 53.21 percent brunettes and 5.89 percent blonds. In reality, however, we find that these types are distributed in the following proportions:

¹ Loc. cit., p. 158.

² Loc. cit., pp. 24-26.

³ Loc. cit., p. 108. For an excellent résumé of the sexual characters of the color of skin, hair, and eyes, see Havelock Ellis, *Man and Woman*, pp. 223-230, London, 1896.

TABLE IV.—TYPES OF PIGMENTATION IN 2272 JEWS

Type	Jews		Jewesses	
	Number	Percent	Number	Percent
Brunette	675	56.82	633	58.39
Blond	119	10.02	107	9.87
Mixed	394	33.16	344	31.74
Total	1188	100.00	1084	100.00

From this table we find that in 56.82 percent of all the Jews observed, both the hair and the eyes were dark; the combination of fair hair and eyes was observed in 10.02 percent of Jews and in 9.87 of Jewesses. The brunette type, which is considered characteristic of the Jews, is thus reduced to only 56 percent in the contemporaneous representatives of the race. But when we recall that other races of Europe show even a smaller percentage of their racial type combination, we are not surprised. In Germany, among 6,000,000 school children only 31.80 percent had both blond hair and blue eyes, while of the 75,377 Jewish children 42 percent were of the pure brunette type.¹ In Austria, Schimmer has found that of non-Jewish school children 19.79 percent were of the pure blond type and 23.17 of the brunette type, while Jewish school children showed a percentage of from 32 to 47 for pure brunettes according to the province, and from 8 to 14 percent of pure blonds.² That the Jews have apparently not kept themselves free from intermixture can be seen from the number of mixed types found among them. Thirty-three percent of the Jews had dark hair with light eyes, or the reverse; Weissenberg³ found 27.9 percent of mixed type; Yakowenko⁴ observed 67.31 percent, and Majer and Kopernicki⁵ 61 percent. Talko-Hryniewicz⁶ records even 74.3 percent of mixed

¹ R. Virchow, "Gesamtbericht . . . über die Farbe der Haut, der Haare und der Augen," etc., *Archiv für Anthropologie*, XVI, p. 298.

² G. A. Schimmer, "Erhebungen über die Farbe der Augen, der Haare und der Haut bei den Schulkindern Oesterichs," *Mittheilungen der Anthropologischen Gesellschaft in Wien*, suppl., 1884.

³ Loc. cit., p. 107.

⁴ Loc. cit., p. 45.

⁵ "Charakterystyka fizyczna ludnosci galicyjskiej," *Zbior Wiadomosci do antropologii Krajowej*, I, p. 111.

⁶ Loc. cit., p. 45.

types among 869 Jews in southern Russia, and in Poland there were 41.53 percent according to Elkind.¹ In addition, the great number of individuals with blond and light-chestnut hair,—irrespective of their association with light or dark eyes, which reaches 13.98 percent (exclusive of the red) in the Jews and even 16.14 percent in the Jewesses we have investigated,—also indicate foreign intermixture, and the same can be seen from the number of blue and gray eyes, amounting to 41.59 percent in Jews and 36.54 percent in Jewesses. All this again points to racial intermixture. Appended is a table representing the results of investigations of the color of the hair and eyes of 145,380 Jewish school children in Germany, Austria, and Hungary.

TABLE V.—COLOR OF EYES AND HAIR IN 145,380 JEWISH CHILDREN

Country	Number of Children	Hair (percent)				Eyes (percent)			Authority
		Blond	Brown	Black	Red	Blue	Brown	Gray	
Germany	75,377	32.03	54.39	11.46	0.42	19.30	51.99	27.00	Virchow
Austria	59,808	27.0	55.4	16.9	0.6	23.5	45.9	30.6	Schimmer
Bavaria	7054	30.0	50.0	20.0	—	20.0	49.0	31.0	Mayr
Hungary	3141	23.7	57.0	19.3	—	18.3	57.5	24.2	Korösi

From this table we find that children with blond hair number 23.7 percent in Hungary and as high as 32.03 percent in Germany. This large proportion is true also of children with blue or gray eyes—in Hungary their percentage being 42.5 and in Austria 54.1. These figures would seem to indicate wide Teutonic influence.

The color of hair and eyes of children frequently becomes darker as the latter approach maturity. Observations show that from 10 to 20 percent of children who have blond or flaxen hair and blue eyes become darker as their age advances.² Some anthropologists even reject investigations on pigmentation in children as useless on this account,³ and a survey of table VI, which shows the color of the hair and eyes in adults, shows that the percentage of light hair is reduced to 2.6 percent in Beddoe's observations on

¹ Loc. cit., p. 39.

² See Frisch, "Bemerkungen zur anthropologischen Haar untersuchung," *Zeitschrift für Ethnologie*, p. 190, 1888.

³ See *Reports of the Anthropometric Committee of 1883*.

Ashkenasic Jews, but reaches 21.10 percent in Majer and Kopernicki's series of Galician Jews, and even 32 percent in Blechman's series of Jews from northern Russia. The last mentioned may be due to chance, as the number of individuals observed was only one hundred. The percentage of dark-haired individuals is perceptibly increased in adults.

TABLE VI.—COLOR OF HAIR AND EYES IN 5501 JEWS

Observer	Country	No.	Hair			Eyes		
			Dark	Fair	Red	Brown, Black	Blue	Gray
Majer and Kopernicki	Galicia	943	74.54	21.10	4.36	55.04	7.95	37.01
Blechman	Russia	100	68.00	32.00	—	57.00	10.00	33.00
Weissenberg	Russia	100	83.00	13.00	4.00	67.00	22.00	11.00
Talko-Hryniewicz	Russia	938	75.79	20.05	4.16	52.19	10.34	36.47
Yakowenko	Russia	245	87.29	12.70	—	69.8	4.90	25.3
Beddoe								
<i>Sephardim</i>	} Various {	290	93.0	3.5	3.5	68.0	20.0	12.0
<i>Ashkenasim</i>		375	95.3	2.6	1.1	59.0	27.0	14.0
Lombroso	Italy	103	96.0	4.8	—	70.00	—	30.00
Pantukhof	Caucasia	251	96.0	2.0	2.0	—	—	—
Pantukhof	Caucasia	204	—	—	—	84.31	1.47	15.19
Glück	Bosnia	55	79.6	18.5	1.8	69.1	—	30.9
Ammon	Baden	86	84.9	12.8	2.3	48.8	25.6	25.6
Jacobs								
<i>Ashkenasim</i>	} England {	423 {	73.8	25.5	0.7	58.8	11.1	30.1
<i>Sephardim</i>			88.1	11.9	—	66.8	21.3	11.9
Elkind	Poland	200	96.81	0.53	2.66	60.5	22.0	17.5
Fishberg	Various	1188	83.49	13.98	2.53	58.41	24.08	17.51

Another interesting point is the high percentage of red-haired Jews. From our own investigations we find 2.53 percent of men and 3.69 of women with red hair. Majer and Kopernicki, Weissenberg, and Talko-Hryniewicz find 4 percent of Jews with red hair, and Beddoe's studies of the Sephardim, who are known to be darker than the Ashkenasim, show 3.5 percent with red hair. Glück¹ found one red-haired individual among fifty-five Jews in Bosnia, but he states that this is due to chance, because there is no doubt that red-haired Spagnuoli² are quite common in Bosnia, and

¹ "Beitrage zur physischen Anthropologie der Spaniolen," *Wissenschaftliche Mittheilungen aus Bosnien und der Hercegovina*, IV, pp. 587-592.

² The Jews in Europe are divided into two main groups, *Ashkenasim* and *Sephardim*. The former constitute about ninety percent of the modern Jews, while the latter are only about ten percent. These two groups of Jews differ in their traditions, rites, and physical type. Some anthropologists consider the Sephardim as the branch of Israel which has maintained to the present time the Semitic type in a purer state and has kept itself more free from admixture of non-Semitic blood than the Ashkenasim — the German and Polish

the proportion of such individuals is really greater than his figures would indicate. Indeed, erythrism has been regarded as characteristic of the European Jews. We find that the red hair, particularly the beard, is usually frizzly and nearly always accompanied by freckled skin. This erythrism appears not to be of recent origin; it was not unknown among the ancient Hebrews, for Esau was said to have been "red all over like a hairy garment."¹ The reference to David as "ruddy" is explained by the Targum as "red-haired." Jacobs² comments on this as showing that the Jews of the time when the Targum was written (about 600 A. D.) were not averse to regarding the typical Jewish king as rufous. Painters in the early centuries of this era represented Christ with light hair, and Mary Magdalene is almost always depicted as having light hair. Judas Iscariot is considered to have been a typical red-haired individual, although the New Testament makes no mention of it.

The hair of the beard in males is usually lighter than that of the head, and red beards are more frequent than red heads. Observations on the color of the beards of 587 Jews show the following distribution:

TABLE VII.—COLOR OF THE BEARD IN 587 JEWS

	Number	Percent
Black	175	29.82
Brown	118	20.10
Chestnut	81	13.80
Light chestnut	34	5.79
Blond	115	19.59
Red	64	10.90
	587	100.00

Jews. The name *Sephardi* has its origin in *Sepharad*, the biblical name of an unknown land into which the Jews exiled from Jerusalem were brought (see *Abadias*, 20). The Medieval Rabbi believed that Sepharad referred to Spain and Portugal; hence the name Sephardim. When banished from Spain in 1492, about 300,000 Jews were dispersed: some wandered to northern Africa; others to Italy, Turkey, Asia Minor, etc. The remnants of these Jews living at the present time in the Balkan states, as Bosnia, European Turkey, Roumania, etc., are known by the name *Spagnuoli*, probably because of the Spanish jargon they still employ. See W. Z. Ripley, *Races of Europe*, pp. 385-386, New York, 1899; Richard Andree, *Zur Volkskunde der Juden*, pp. 100-104, Leipzig, 1880; A. Leroy-Beaulieu, *Israel among the Nations*, pp. 119-120, New York, 1896; also Glück, loc. cit.

¹ *Genesis*, XXV, 25.

² *Journal Anthropological Institute*, xv, pp. 23-62.

From this table it is found that red hair is nearly three times as common in the beard as in the hair of the head. This is not at all surprising to any one who has observed the Jews closely, for the beard is quite frequently red and very often has at least a rufous tinge of frizzly character. I find that red beards are more frequently found among the Jews of Galicia than among those of other countries. Besides the red beards we find from the table that 25.38 percent of Jews had fair colored beards—nearly double the proportion of those with fair heads.

We have distinguished four varieties of hair: (1) Smooth (*Schlicht* in German, *droit* in French); (2) Wavy (*wellig* in German, *ondé* in French); (3) Frizzly (*lockig* in German, *frise* in French); (4) Woolly (*kraus* in German, *crêpé* in French). Observations on 867 men showed the following distribution in the varieties of hair:

Smooth hair	582 = 66.97 percent
Wavy hair	223 = 25.66 percent
Frizzly hair	55 = 6.33 percent
Woolly hair	9 = 1.04 percent

Weissenberg has found 88 percent of smooth, 14 percent of wavy, and 2 percent of frizzly hair. From our own figures it is seen that 93 percent of the hair of Jews is either smooth or wavy, and that frizzly hair is rare (6.33 percent). Weissenberg¹ found only two curly haired Jews among 100, and Majer and Kopernicki² found only one curly haired individual in 118, or 0.84 percent. Yakowenko³ found 4 percent with curly hair, and Glück⁴ found among the Spagnuoli of Bosnia that 52.9 percent had smooth or wavy, and 47.1 percent curly or frizzly hair. Weissbach,⁵ in his study of the Jews of the Balkan peninsula, found that curly hair is very frequent among them, the proportion being as high as 10 in 19. This last is of course a rather large percentage not borne out by

¹ Loc. cit., p. 103.

² Loc. cit., p. 115.

³ *Materials for the Anthropology of the Jews* (in Russian), p. 153, St Petersburg, 1898.

⁴ Loc. cit.

⁵ "Körpermessungen verschiedener Menschenrassen," *Ergänzungsband, Zeitschrift für Ethnologie*, pp. 212-225, Berlin, 1877.

U O N

any other investigation, and the only way in which it can be explained is that it is due to chance, owing to the small number of individuals observed (55 by Glück and 19 by Weissbach), or to judging the variety by the appearance of the beard which is very frequently frizzly in Jews; indeed the rufous beards are almost always frizzly, while the black beards are often of the same character.

Pigmentation undergoes changes with advance in the age of the individual. Grayness, or canities, may be premature or senile. Up to the age of 35 or 40 years the hair retains its normal color with most people. If grayness occurs before that time, it is considered premature; otherwise it is considered to be normal or senile. We noted grayness in 161 individuals over 20 years of age, being 18.52 percent of the total of 867. The youngest individual with gray hair was 22 years of age; the oldest retaining the natural color of his hair was 46 years of age. Weissenberg thinks that grayness appears quite early in Jews, while Yakowenko¹ shows that it appears rather late, or about the age of 45 years. From our own observations we do not think that the Jews show any marked difference in this respect to other civilized peoples. Of the 161 gray-haired individuals examined, only 28 were younger than 35 years — a proportion which cannot be regarded as abnormal.

Another change in the hair which appears with advanced age is baldness, or alopecia, due to arrested development of the pilary system. It normally appears at about the age of 45 years, when other signs of decay become manifest, as grayness, loosening or decay of the teeth, diminution in the keenness of sight, etc.; under these circumstances it is called *alopecia senilis*. On the other hand, *alopecia prematura* takes place at an earlier age, and is more frequent in brain workers and in those leading sedentary occupations or exposed to prolonged mental worry. Many writers have stated that this change takes place earlier in Jews than in non-Jews. Weissenberg² has found that 16 percent of Jews between the ages of 21 and 50 years presented more or less baldness, the youngest showing this change being 23 years of age. Yakowenko,³ on the

¹ Loc. cit., pp. 31-32.

² *Die südrussischen Juden*, p. 103.

³ Loc. cit., p. 32.

other hand, shows that baldness is exceptional in Jews younger than 46 years, and when it occurs before this age it is usually due to favus. From our investigations we are inclined to agree with Yakowenko. Excluding alopecia due to favus we have found 83 individuals with more or less baldness among the 1188 over 20 years of age. The youngest was of 26 years. Only twelve individuals younger than 40 were affected with baldness.

Freckles (ephelides) was noted in all the red-haired individuals, and those having swarthy skin are also very often affected with freckles. Of 74 men and 62 women observed with light hair, only 4 men and 2 women were freckled.

The most important point brought out by our investigation of the characteristics of the color of the hair and eyes of modern Jews is the large proportion of those with blond hair and blue eyes. From our study of the head-form of the Jews it was found that there is a remarkable uniformity of type and that no racial intermixture is observable. With pigmentation the case is different — 12 percent of modern Jews are diverging from the brunette type, having a combination of blond hair and blue eyes. In addition a still larger percentage of blond traits are today found "scattered broadcast without association one with another," as Ripley would say. If the Jews are a pure race, as some claim, and as their crania would seem to indicate, how can we account for the blond hair and the blue and gray eyes? Broca,¹ discussing this problem in 1861, expressed the belief that the blond Jews of Alsace-Lorraine and Germany had their origin in the intermixture of Jews with northern races, and that the dark hair of the Jews did not become lighter as a result of climatic influences. On the other hand, Pruner Bey asserted his conviction that the blond Jews are not the result of racial intermixture. Among the ancient Hebrews blond traits were not rare, and these were transmitted to the modern Jews by heredity.

The black Jews of Cochin (India) and the interior of Malabar have, according to Prichard,² become dark and completely like the native inhabitants in their complexion as a result of climatic influences, notwithstanding the fact that these Jews avoid all intermix-

¹ *Bull. de la Soc. d'Anthropologie de Paris*, 11, p. 410.

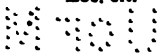
² *Natural History of Man*, p. 145, London, 1848.

ture with the native inhabitants. It is now established, however, that this view is totally wrong, and that these black Jews are the descendants of ancient negro slaves who had been converted to Judaism. In Abyssinia there are also black Jews, called *Falashas*, who are of negro descent, and a similar class exists in Persia. All this shows that climate had nothing to do with the production of the black Jews.

Virchow investigated the question whether the blond Jews of Europe are the result of their sojourn for centuries in a northern climate. While classifying the colors of the skin, hair, and eyes of Jewish school children in Germany, this authority¹ was surprised to find 11.17 percent of pure blond type, and urged the importance of determining whether these "Indogermanic" Jews were the result of an infusion of Aryan blood, or whether the ancient Hebrews were already a mixed race of blond and brunette types. An investigation by Virchow in separate provinces of Germany disclosed the noteworthy fact that in localities where the Jews have lived for centuries in strict isolation from other races, owing to religious and social conditions, and presumably did not intermarry with their Gentile neighbors, the proportion of blond types did not decrease. In the Prussian provinces the Jews are not isolated socially, but on the contrary have entered into general social intercourse with the non-Jewish people among whom they dwell. As the percentage of blond types among the Germans in Prussia is very high, Virchow made observations to determine whether this fact had any influence on the proportion of blonds among the Prussian Jews, but found that this was not the case. It is remarkable that in the German provinces in which the blond types preponderate, the Jews exhibit a larger proportion of brunettes. On the other hand, it is a striking fact that farther south, in Silesia, where the non-Jewish population are of very dark complexion, the Jews have a high percentage of blonds. The same is the case in Austria where, as shown by Schimmer,² the farther eastward one goes the greater the percentage of blonds is found.

¹ Loc. cit.; also "Berichterstattung über die statistischen Erhebungen bezüglich der Farbe der Augen, der Haare und der Haut," *Correspondenz-Blatt für Anthropologie, Ethnologie und Urgeschichte*, pp. 91-111, 1876.

² Loc. cit.



Virchow was of the opinion that this increase in blond traits in eastern and southern Germany and Austria can be explained by the large number of conversions to Judaism and marriages between Jews and non-Jews which took place in these provinces in the Middle Ages. Their number was so large that King Ladislaus of Hungary issued a decree in 1092 prohibiting marriage between Jews and Christians. This decree apparently did not have the desired effect, for in 1229 Bishop Robert van Grau reported that many Jews lived with Christian women illegitimately and that the latter were often converted to Judaism; that Christian parents sold their children to Jews, and that many even permitted themselves to be circumcised. In a few years Christianity thus lost thousands of adherents.¹

Another method of determining whether the blond traits of the Jews originated in Aryan intermixture is to learn the relation of the color of hair and eyes to other racial traits, such as cranial type and stature. If we find that most of the blond Jews are tall in stature and dolichocephalic, we may have reasonable ground for ascribing the origin of these characteristics to an infusion of Teutonic blood. Few anthropologists have studied the problem from this point of view. Majer and Kopernicki² have found that while among the brunette Jews of Galicia 6.2 percent are dolichocephalic, 20 percent of the blond Jews of the same section are also dolichocephalic. This of course tends to indicate some relation between blondness and long-headedness among the Jews in Galicia. Pantukhof³ found that in Odessa, Russia, the Jews who have dark hair and eyes are of short stature, while those who have gray or blue eyes and fair hair are taller. The same observer reports⁴ that among the Jews in Caucasia he found that those who are tall in stature have usually light eyes; those who had brown eyes were 1.617 meters in height while those with light eyes averaged 1.644 meters. On the other hand, Ammon⁵ found no relation between blond hair, blue eyes, and

¹ v. Czoernig, *Ethnographie der Oestr. Monarchie*, II, pp. 113-114, quoted from R. Andree, *Zur Volkskunde der Juden*, pp. 53-54, Leipzig, 1881.

² Loc. cit., part I, p. 132.

³ "Semitic types" (in Russian), *Proc. Russian Anthropological Society*, pp. 26-30, St Petersburg, 1889.

⁴ *Observations anthropologiques au Caucase* (in Russian), pp. 37-38, Tiflis, 1893.

⁵ *Zur Anthropologie der Badener*, pp. 663, 664, Jena, 1899.

dolichocephaly among the Jewish recruits in Baden, Germany; while Elkind¹ found that in Poland the Jews who have dark hair and eyes are taller than those who have fair hair and eyes. But all these investigations are based on few observations. We hope in the near future to speak again of this question when discussing the interrelations of the physical characteristics of the Jews. Because of the large amount of material we are collecting on the subject, we hope to be able to contribute to the solution of this important problem.

Richard Andree² does not agree with the view that the blond elements in the modern Jews are due to Aryan influence. He points to the fact that among the Syrians in Palestine there is a considerable proportion of blonds and that there were blonds among the ancient Hebrews. He is therefore inclined to consider the blond traits among the Jews of today as an inheritance from the Hebrews of ancient times.

Luschan points out that while intermarriage between Jews and Christians was quite common in the Middle Ages, it was not sufficient to account for the 11 percent of blond types among the German Jews, and in the same manner he disposes of the theory, advanced by some, that the origin of the blond Syrians is to be looked for in the intermarriage of the Syrians with European crusaders. The blond types among the Syrians, as well as among the Jews, had their origin in the blond people who inhabited Syria in antiquity. These were the Amorites, known in the Bible as the "sons of Enak," who were "men of great stature." They are known to have been a blond people from the colored representations of them which have been left on various monuments by the ancient Egyptians. Luschan³ considers these Amorites as Aryan, and claims that all evidence points to them as the ancestors of the blonds among the modern Jews.

There are many evidences in the Bible showing conclusively that the ancient Hebrews have not maintained themselves in that state

¹ Loc. cit., pp. 86-87.

² *Zur Volkskunde der Juden*, p. 34, Leipzig, 1883.

³ "Die anthropologische Stellung der Juden," *Correspondenz-Blatt für Anthropologie, Ethnologie und Urgeschichte*, XXIII, pp. 94-102, 1892.

of extreme purity which is generally supposed. The prohibition of intermarriage with Gentiles is good proof that cross-marriage frequently occurred, because if it had not, there would have been no use in enumerating the Hittites, Girgashites, Amorites, Canaanites, Perizzites, Hivites, and Jebusites, and to state that "neither shalt thou make marriages with them; thy daughter thou shalt not give unto his son, nor his daughter shalt thou take unto thy son."¹ The patriarchs also intermarried with Gentiles: Abraham cohabited with Hagar, an Egyptian; Joseph also had an Egyptian wife—Asenath, the daughter of Potipherah, priest of On.² Moses married a Midianite woman, Zipporah,³ but he was rebuked for this act: "Miriam and Aaron spake against Moses because of the Ethiopian woman whom he had married."⁴ In addition may be mentioned the "mixed multitude" that went along with the Hebrews when they left Egypt,⁵ and in all probability later intermarried with them. King David was the son of the Moabite Ruth; and of Solomon, himself the son of an Hittite woman, the Bible says he "loved many strange women, together with the daughter of Pharaoh, women of the Moabites, Ammonites, Edomites, Zidonians, and Hittites."⁶ Such intermarriages with Gentile women by the great patriarchs and kings of Israel were in all probability imitated and practised by many of the ancient Hebrews. When, after the Babylonian captivity, the tribes of Judah and Benjamin returned to Jerusalem, Ezra arraigned the Hebrews for their intermarriage with Gentiles and appealed to them to maintain the purity of the race of Israel. "Ye have transgressed, and have taken strange wives, to increase the trespass of Israel," said the prophet.⁷ Nehemiah speaks in similar terms: "In those days also saw I Jews that had married wives of Ashdod, of Ammon, and of Moab; and their children spake half in the speech of Ashdod, and could not speak in the Jews' language, but according to the language of each people."⁸ There is also good evidence in the Talmud of intermarriage between the ancient Hebrews and their Gentile neighbors, and there is historical record of a remarkable wholesale conversion to Judaism

¹ *Deuteronomy*, VII, 1, 3.

² *Genesis*, XLI, 45.

³ *Exodus*, II, 21.

⁴ *Numbers*, XII, 1.

⁵ *Exodus*, XII, 38.

⁶ *I Kings*, XI, 1.

⁷ *Ezra*, X, 10.

⁸ *Nehemiah*, XIII, 23, 24.

in southern Russia in the Middle Ages. The Chozars, a Turanian tribe, accepted Judaism, according to Alexander Harkavy, in the year 620 of our era ; others again believe that it occurred in the eighth century. Other conversions have taken place, some of which are mentioned above. These intermarriages have left their impress on the modern Jews. The blond traits may be regarded as having originated in the infusion of non-Jewish blood into the veins of the modern Jews.

A WHEEL-SHAPED STONE MONUMENT IN WYOMING

By S. C. SIMMS

While on a visit, in the interest of the ethnological division of the Field Columbian Museum, to the Crow (Ab-sah-ro-kee) Indians, of Montana, during June, July, and August, of 1902, I was told of the existence of what my informant termed a "medicine wheel" on the summit of a mountain which he called "Medicine mountain," situated just across the Montana-Wyoming boundary line, in the Big Horn range of mountains in the latter state.

Although I made many inquiries of the old men of the Crow tribe regarding the "medicine wheel" and its significance, I found not one who had ever visited it. A few of them had heard of it through their fathers, but they could tell me nothing whatever of it excepting that "it was made by people who had no iron." At different times I chanced to meet with two Sioux Indians who were visiting the Crows, and they also were asked about the wheel. After inspecting the diagram of it, which I had hastily drawn in order to make clearer the questions asked them through an able interpreter, each of the two Sioux drew a diametrical line through the wheel and, pointing to one half, said, "Arapaho," and then pointing to the other half said, "Cheyenne." Each one declared that he had not seen the wheel nor knew of its location, but had heard of it some time ago.

The information obtained up to this time being too meager to warrant an attempt on my part to locate the so-called wheel, or even Medicine mountain, I had almost concluded to abandon hope of seeing the monument on this visit, when I was approached by a white man, known to the Indians and the whites on the reservation as "Silver-tip," who had spent much of his life prospecting and hunting in the Crow country (in fact, he had been adopted when a boy by a Crow chief named Sorrel-horse), and who informed me that as he was thoroughly familiar with the surrounding country he could

tell approximately where the "medicine wheel" was situated. I therefore engaged Mr Silver-tip to conduct me to it. We left the Crow agency, accompanied by Messrs Green and Reynolds, on Wednesday morning, July 9th, and arrived at the base of Medicine mountain after sunset of the following Friday.

The ascent of the mountain, which was effected early the next morning, was laborious and difficult, owing both to the ruggedness of the line of ascent which our guide selected and to the snow-drifts which we encountered. After a climb of about five miles we came upon an old, well-worn trail on the north side of the mountain. Unlike the south side of the height, which is almost perpendicular, the north side is a steep incline, strewn with small fragments of calcareous material.

The summit of the mountain is not extensive in area; it is irregular in shape, being broad at its western end and tapering with a jagged outline to an abrupt point at the east. Within the narrow limits of this eastern end we found the medicine wheel as it had been described.

This peculiar structure consists of a large number of limestone slabs and boulders of various sizes. Directly in the center, or at what may be termed the hub, stands a circular structure about three feet high, of the same kind of stone, radiating from which are twenty-seven lines, or spokes, of stone leading to a well-formed perimeter (figure 4). Around the outer edge of this circular rim or "felly" of the wheel, at irregular distances, are the remains of seven smaller stone structures, all of which come in contact with the perimeter except the most southerly one which stands several feet away, although it is met by an extension of one of the spokes beyond the rim of the wheel. Each of these smaller stone structures is circular at the base with the exception of the easternmost, which is squarish and, unlike the others, has a covering of stone slabs and an opening on the outer side through which entrance may be gained by crawling.

Upon the projecting slabs of the eastern side of the central structure rested a perfectly bleached buffalo skull which had been so placed that it had the appearance of looking toward the rising sun. Resting on the rocks near the skull were several other bones of the buffalo.

Within the central structure, which resembles a truncated cone, there is a slight circular depression in the ground. This was carefully examined, as were the spaces within both the central and the smaller structures, but the search yielded nothing. Measurements showed the circumference of the wheel to approximate 245 feet.

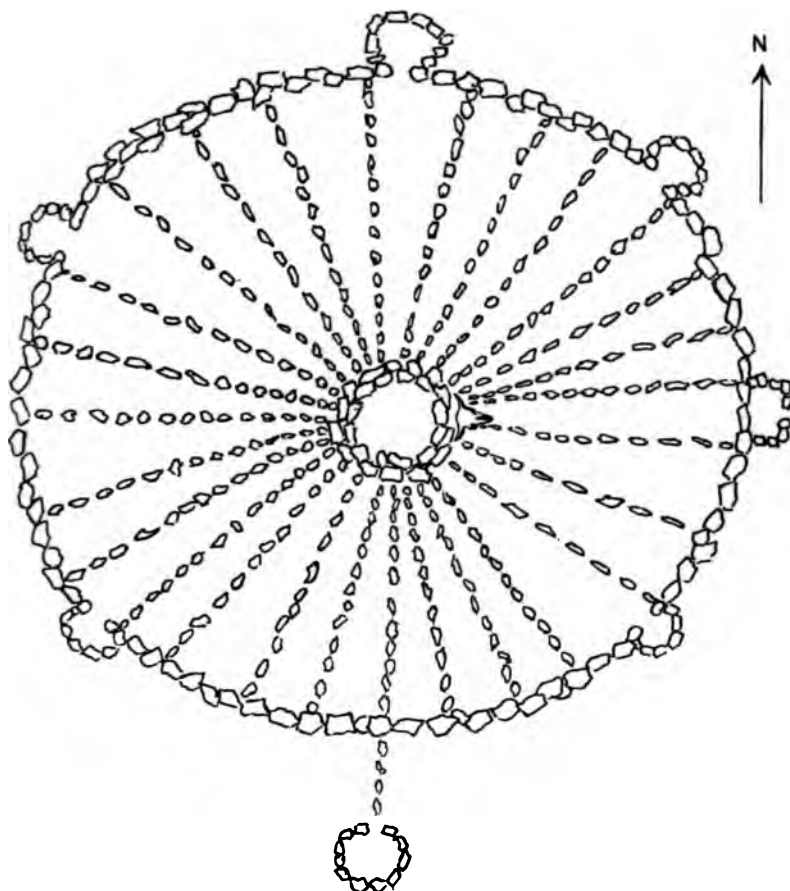


FIG. 4.—Plan of a wheel-shaped stone monument in Wyoming.

Medicine mountain doubtless attains an altitude of more than 12,000 feet above sea-level, for during our journey from the agency we passed several United States Geological Survey stakes on which the altitude is recorded, and the last of these that we passed before

reaching the base of mountain, which was many miles away and we were still steadily ascending, indicates an altitude of over 9,000 feet. From the top of the mountain an excellent panoramic view was had of the surrounding country of the Big Horn basin, including Big Horn cañon, Devil's cañon, the various winding streams, and in the distance outlines of the Rocky mountains were discerned.

From lack of definite information as to the use of the monument described, the foregoing facts are offered merely as an account of its existence. It is hoped that an opportunity may later be presented by means of which a more exhaustive investigation of the subject can be conducted with satisfactory results.





 *Herbert R. Bishop*

HEBER REGINALD BISHOP AND HIS JADE COLLECTION¹

By GEORGE FREDERICK KUNZ

Among American men of wealth who have been eminent first as collectors and amateurs in various branches of art and science, and then as patrons and public benefactors in the same departments, few names will go down to posterity with greater honor than that of the late Heber R. Bishop, of New York, who died December 10, 1902, leaving memorials in both the great public museums of the metropolis.

Heber Reginald Bishop came of New England stock, his family having emigrated from Ipswich, England, to the Massachusetts colony in 1685, settling in Medford, Massachusetts. Here the subject of this notice was born in 1840. He received a mercantile training in Boston, and at the age of nineteen went to Remedios, Cuba, to engage in the sugar business, which at that time was very flourishing. Two years later, in 1861, he founded the sugar refining and exporting house of Bishop & Company, and for the next decade or more he lived principally at Remedios, although frequently visiting the United States. The business was extensive and prosperous until the disorders, arising from the Cuban revolution, began in 1873, when Mr Bishop saw that the disturbed condition of the island would ultimately ruin his financial prospects. He therefore disposed of his business at a figure far below its value, and returned to the United States with a considerable fortune.

Soon after establishing himself in business he married Miss Mary Cunningham, whose father, James Cunningham, resided at Irvington on the Hudson, and there Mr Bishop established a summer home. He soon became actively interested in various large enterprises connected with gas, iron, and railway interests, and was promi-

¹ Read in abstract before Section II, American Association for the Advancement of Science, Washington, January 3, 1903.

ment in the building of the Third Avenue Elevated Railroad in New York City. Ere long he turned his attention to industrial developments in the west, particularly to several leading railroads of the northwestern states. He was a pioneer in capitalizing and developing the great iron resources of the vicinity of Duluth, Minnesota, and became largely interested in various iron companies in both the west and the east. He was also associated with several important corporations of New York City, such as the Metropolitan Trust Company, and his eminent business abilities were widely recognized.

But Mr Bishop's activities were not confined to mercantile and financial affairs. He was a man of broad public spirit and benevolent aim, and the museums, hospitals, and churches of New York soon became objects of his intelligent and practical interest. His most noted gifts were to the Metropolitan Museum of Art, but he gave also to the American Museum of Natural History, in 1879, a large collection of Alaskan antiquities, and from 1880 to 1883, specimens illustrating the ethnology of British Columbia collected with the coöperation of the late Major J. W. Powell. Among the principal specimens in the latter collection is the great Haida canoe, which measures 64 feet in length and 8 feet in width, being hollowed from a section of a single tree by the Bella Bella tribe of Indians, opposite Queen Charlotte islands.

Mr Bishop possessed and displayed a remarkable appreciation of art in its many forms. On his frequent visits to Europe he found opportunity for acquiring a knowledge of the highest art productions, and he purchased liberally for the adornment of his home with objects of taste and elegance. In this country, too, he manifested the same enthusiasm; he was a constant attendant at art sales and exhibitions, and for over thirty years was known as an extensive collector. As Dr S. W. Bushell, the eminent foreign connoisseur, well said, he was known from St Petersburg to Peking. Mr Bishop's collection of Japanese lacquers, bronzes, and swords was especially noted. At a time when such materials were more readily obtainable than at present, he turned his attention to Oriental textiles and robes, gathering, among other objects of Asiatic art, extensive and remarkable collections of the gorgeous fabrics worn by Chinese nobles and Japanese daimios.

But Mr Bishop's last and most notable specialty was his collection of jades. This began with his purchase of the Hurd vase — one of the finest objects in jade that ever left China — from Tiffany & Company, in 1878. He thus became interested in this peculiar material, with its variety of tints and the endless forms into which it was wrought by Asiatic peoples ; and the result of this interest is the finest collection of jade that exists anywhere in the world. It has been gathered from many lands, and from the sales of many other collections, and contains over a thousand specimens, ancient and modern, in the natural state, or carved, engraved, and jeweled.

Mr Bishop was ever on the alert for choice specimens with which to enrich his jade collection ; he would follow the wanderings of a single piece for years, until the opportunity came for its purchase. In this way he obtained the best examples from many important collections, including the celebrated Welles collection exhibited some years ago at the South Kensington Museum. Among the noted pieces now in the Bishop collection are the emerald-green vase from the Brayton Ives collection, and the cylindrical green vase from the Hurd collection, above mentioned. This vase was obtained in China by Mr Hurd, who was a Boston tea merchant, it having formed part of the loot obtained by the armies of the Anglo-French expedition in 1860, when the forty buildings that comprised the Yuan-Ming-Yuan, or world-famed Summer Palace of Peking, were sacked and the imperial contents — the triumphs of the lapidarian art of centuries — were dispersed to the collections of the world through official, military, and commercial media. No finer example of jade ware existed among all this loot. It is elaborately carved in lantern shape, with foliage and garden scenes, and when a candle is placed within it, the design, with its varying shades of green, is emphasized with exceeding beauty. The collection is also rich in examples of the rare and beautiful "lettuce green" jades, which are highly prized and costly. All the many varieties of tint, and all the types and styles of workmanship in this mineral, which has been almost venerated by the Chinese and other Asiatic nations for centuries, are represented. The collection contains also a series of wonderful jewel-jades from East India, inlaid with large and valuable rubies, emeralds, and diamonds, as well as the famous Kligowski jewel-jades.

Nor is it only the artistic and historical fields that this unique collection illustrates, for the scientific side, both in archeology and mineralogy, is likewise fully represented. The former class comprises typical examples from Mexico, Central America, the north-west coast of America, the Swiss lake-dwellings, France, Italy, New Zealand, and elsewhere; the latter includes specimens with original labels of Damour, and what is perhaps the only known crystal of jadeite, besides a single mass of nephrite weighing 4,715 pounds, found by the present writer in Situ, at Jordansmühl, Silesia, in 1899, and forming the largest piece of nephrite ever found on the European continent—indeed it is greater in weight than all the nephrite objects ever found in Europe.

The collection thus formed grew in the course of time until it came to be recognized as the most complete assemblage of jade objects in the world, exceeding even the fine collection in the British Museum. Mr Bishop finally began to feel that the collection was too important and valuable to remain in private hands, but that it should be accessible to the public in a fireproof building. He therefore commenced preparations for presenting it to the Metropolitan Museum of Art, of which he had for years been a trustee and patron. As an important part of this princely gift to the public and to science, he undertook the preparation of an exhaustive catalogue of the collection, illustrating its artistic, archeological, and geological aspects, which he desired to publish, without regard to expense, in a sumptuous volume limited to one hundred copies. The preparation of the scientific articles and the scientific investigation for the catalogue were assigned entirely to the writer, who was so fortunate as to enlist the coöperation of a dozen men eminent in related fields of research on both sides of the Atlantic; consequently a more thorough investigation of jade has been made in this work than perhaps was ever undertaken in connection with any other mineral. The specific gravity, the tensile strength, the compression test, the sonorousness of the mineral from a musical point of view, a chemical investigation, a macroscopical study, a microscopical examination of thin sections, the origin of the mineral, the mining, the archeological history, the cutting, drilling, polishing, and many other phases, have been studied with the utmost thoroughness, and where a specialist would be

found who more fully understood any special branch of the subject, his services were obtained to perform that part of the work.

Color experts were engaged for the drawings, engravings, and historical data; Chinese and Japanese artists were employed in illustrating it, and Mr Bishop himself supervised their work, which is of the highest quality. Many of the reproductions in color are by Prang, whose work on kindred subjects is so well known.

This unique catalogue was completed a short time ago, and is now about to pass through the press. Illustrations are given of all the more important objects of jade, including those finest in color or in etching. The catalogue presents the dates and gives details of style with historical particulars; it thus furnishes an important contribution to our knowledge of Oriental art, and will rank among the most authoritative and costly catalogues of the kind known, each copy representing an expenditure of about one thousand dollars. The work will be distributed only by presentation to important institutions having facilities for utilizing it, and to the crowned heads and other great rulers of the world. Not a single copy will be given to any private person not a member of Mr Bishop's family, nor will any copy be sold.

A circumstance which illustrates Mr Bishop's rare judgment and skill in selection, is the fact that in the minute scientific investigation to which the specimens were subjected, less than one percent were discarded as not being true jades; and these, strange to say, were pieces that had a reputation for purity or rarity of color, or some other property which the Chinese peculiarly value in jades, and in which they had themselves been misled.

In May, 1902, when Mr Bishop formally announced his gift of the collection to the Metropolitan Museum, he expressed the wish that the magnificent cases now containing the jades should form a part of the collection, and that the room in which they were to be exhibited should be a reproduction of his own ballroom where he had kept the collection. This magnificent apartment has been pronounced by some of the greatest foreign architects to be the finest Louis XV. room that may be seen anywhere, excepting possibly those at Versailles and Potsdam. These wishes were acceded to, and Mr Bishop went to Paris to supervise the reproduction of this

ballroom, making a gift of \$55,000 to the Museum to cover the cost of finishing the room and of installing the collection in accordance with his desire. The Louis XV. cases referred to are constructed of the finest quality of gilt bronze and plate glass, and are a production of the house of Allard & Company of Paris. The spacious room in a northeastern corner of the Museum which has been prepared for the collection is to be known as Bishop Hall. A year will probably elapse before the collection can be made ready for the public view. In order to insure the consummation of his plans regarding the collection and the publication of the great catalogue, Mr Bishop has bequeathed \$50,000, in addition to his other gifts.

Although he had presented no special collection to the Metropolitan Museum except that of the jades, Mr Bishop contributed largely in other ways to the support of that institution. He did more than any one else toward the success of the project to save in its entirety and to present to the Museum the collection of swords made by Mr Brayton Ives, and which were offered for sale after the latter's death. Through the coöperation of Mr Bishop, the late W. T. Walters, the American Art Association, and a few others, this collection, valued at \$15,000, was contributed to the Museum.

Of special importance was Mr Bishop's collection of Japanese iron-work, many of the examples being quite old. Among the specimens in this collection is a dragon nine feet in length, as flexible as a living reptile; and by way of contrast, a skeleton of a man, no larger than the little finger, yet containing a representation of every bone in the body and every joint, uncannily mobile. The lobsters, fish, and other objects of the same material make a collection that stands unrivaled in the United States. There is also a great display of *cloisonné* enamels; a large collection of carved ivories, many of them old and wrought with that artistic intricacy of detail attained only by the Orientals; an extensive series of lacquers and carved woods, of porcelains and Chinese coins; and lastly, a collection of hard stones other than jade. If this collection could be procured in its entirety for the Metropolitan Museum of Art, either by purchase or by donation, this would become one of the greatest museums for Orientalia in the country. With these,

and the Morgan-Garland porcelains and the Bishop jades in New York ; the Morse Japanese pottery and the S. W. Bigelow collection of Chinese and Japanese art objects in Boston ; the great Henry Walters collection of Oriental art in Baltimore ; the Detroit collection, and the fine display in the National Museum at Washington, the art of Japan and China can be studied better in America than anywhere else in the world.

It is rarely the case that one whose financial and social duties are so numerous as were those of Mr Bishop devotes so much time and achieves such notable success in connection with a single object of the kind herein mentioned. To Mr Bishop science and art owe the formation of a great collection ; the preparation of a scientific, artistic, and literary description of it ; the publication of a volume of such richness of illustration as to stand unparalleled ; and, finally, the presentation of the collection and its installation in a specially prepared hall in a leading museum.

ANTHROPOLOGY AT THE WASHINGTON MEETING

By GEORGE GRANT MAC CURDY

The affiliation of the newly founded American Anthropological Association and the American Folk-lore Society with Section H of the American Association for the Advancement of Science has resulted in the unification of all anthropological interests strictly national in scope. The union of these forces was reflected in the joint program for the closing day of the recent Washington meeting, after one day had been devoted to each of the three separate societies.

Three of the special committees of the American Association for the Advancement of Science are chosen from among the anthropologists. The Committee on the Teaching of Anthropology in America submitted a report to the Council which will be printed later. There is no record of any report from the Committee on the Protection and Preservation of Objects of Archeological Interest. The Council adopted the report of the Committee on Anthropometric Measurements, which is as follows :

This committee begs to report that anthropometric researches have been continued at Columbia University under the direction of its New York members and with the coöperation of Professor Farrand, Professor Thorndike, Dr Wissler, Mr Bair, Mr Davis, and Mr Miner. Tests have been made on the freshmen entering college, calculations have been carried out on measurements of school children, and new determinations of the mental traits of school children have been made and correlated. The chairman of the committee has carried forward an extensive anthropometric study of American men of science, the preliminary results of which formed the subject of his address as president of the American Society of Naturalists. An anthropometric laboratory has been arranged at the present meeting of the association, with the \$50 appropriated at the Pittsburg meeting for the purpose, and tests of the physical and mental traits of members are being made. We ask that this committee be continued and

that a further appropriation of \$50 be made in order that a similar laboratory may be arranged at the next meeting of the association.

J. MCK. CATTELL,

W J MCGEE,

FRANZ BOAS.

The scientific proceedings began with the address of the retiring Vice-President, Mr Stewart Culin, on "New World Contributions to Old World Culture." Mr Culin dealt particularly with the evidence he has accumulated from a thorough study of games as played by various peoples. His intimate knowledge of the subject lends great weight to his conclusions, one of these being that the southwestern portion of the United States was a center to which may be traced the origin of game-customs and paraphernalia now found in regions remote from that common center.

A paper from Dr A. L. Kroeber on "Tribal and Social Organization of the Indians of California," and one from W. W. Tooker on "Algonquian Names of Mountains and Hills" were both read by title, the authors being absent.

Dr W J McGee, the representative for the United States on the International Archeological (and Ethnological) Commission, described the steps which have been taken toward forming the Commission. He said, in part, that at the International Conference (commonly known as the Pan-American Congress) held in Mexico during the winter of 1901-02, a proposal to inaugurate joint action by the several American countries relating to the antiquities of the western hemisphere received consideration; and, after due discussion, the Conference agreed to recommend formally to the several countries participating that an International Archeologic Commission be established on a basis similar to that of the Bureau of American Republics; the Commission to be especially charged with the unification of laws relating to American antiquities, with the diffusion of knowledge concerning these antiquities, and, if practicable, with the establishment of an International Archeological Museum. The first country to take action pursuant to the recommendation was Mexico; President Diaz named Dr Alfredo Chavero as his official representative in making preliminary inquiries as to the feasibility of the plan. Dr Chavero conferred with archeologists and others

interested in the matter in Mexico, and also in Washington and elsewhere; and on his recommendation the Mexican Ambassador at Washington, His Excellency Don Manuel de Aspiroz, was made the official representative of the Mexican Republic for the purpose of organizing the Commission; soon afterward the speaker was designated, through the Secretary of State, as a similar representative on the part of the United States. The diplomatic representatives of several other American Republics have taken active interest in the plan, and the indications are that their respective countries will act favorably on the recommendation and participate in the organization of the Commission.

Under the title "Military Insignia of the Omaha," Miss Alice C. Fletcher described the two classes of warfare carried on by this tribe — aggressive war, which is in the direction of men; and defensive war, that which is in the direction of women or the tent. The war parties were also of two classes, one having for its object the securing of spoils, and the other, revenge, the latter ranking higher. All parties, whether of a few warriors or a hundred, had a leader who in turn appointed some to serve as hunters for the band; some as moccasin-carriers; others as kettle-carriers; and still others as fire-makers and water-carriers. The awarding of the six grades of war honors took place only within the sacred tent of war, each having its own peculiar insignia, and represented a warrior's act which had been recognized by the supernatural powers and awarded in the sacred tent. The eagle-feather war-bonnet was manufactured by the warriors of the tribe, with ceremony and song, and a war honor was counted upon each of the feathers, so the completed headdress represented the warriors of the tribe who had consented to bestow this mark of distinction upon a fellow tribesman. No regalia was worn in actual battle.

That "Sheet Copper from the Mounds is not Necessarily of European Origin" was the theme of a paper by Clarence B. Moore, which, with the discussion that followed, together with a paper on a kindred subject by Mr Warren K. Moorehead, appears in this issue of the *American Anthropologist*.

Prof. E. L. Hewett read two papers, one of which, "The Extinction of the Pecos Indians," is an account of the writer's attempt

to find all the surviving members of that tribe. Not one of those who settled at Santo Domingo and Sia is left. At Jemez there is but one survivor, Agustin Pecos, and it is from him that information was obtained concerning the language, customs, folklore, and religion of his tribe. There are other descendants of mixed blood.

Professor Hewett's other paper, a "Comparative Study of Mortuary Pottery from Pajarito Park and Tewa" was thoroughly illustrated by numerous drawings in black and water-colors. The pottery taken from the cliff ruins of Pajarito park was compared with that made by the Tewa Indians of Rio Grande valley, especially as regards design and form.

"Economic Anthropology" was the subject chosen by Prof. Lindley M. Keasbey. He said, in part, that in the domain of physical anthropology good results have been obtained. By applying the biological principles of variability and variation, anthropologists have succeeded in elaborating a fairly good account of the origin, dispersion, and differentiation of the human species; but in the domain of cultural anthropology confusion still prevails, owing to the fact that no principle of continuity has been applied to the cultural activities of primitive people. The economic activities of man are necessarily antecedent to his cultural activities — true, man does not live by bread alone, but unless man labors for his daily bread he is not able to live. Therefore, anthropologists should begin their inquiries by studying the economic activities of primitive peoples. By applying the economic principles of utility and utilization, the anthropologist should be able to establish the first stages of industrial development and determine the essential characteristics of primitive culture.

Prof. W. H. Holmes presented a valuable paper on "The Fossil Human Remains Found Near Lansing, Kansas," which was published in the last number of this journal. Professor Holmes' second communication was a presentation of "Incrusted Crania from Caves in Calaveras County, California."

The result of "The Excavations of the Gartner Mounds" was given by Mr W. C. Mills. In one of these famous Ohio mounds many graves were scattered throughout the whole mound, about one-third being placed below the base of the mound at varying depths, up to

five feet. The base of one covered an old village site and was of tamped clay, with a layer of ashes over the clay; the burials in this one were few, and were three and a half feet above the clay base. Many artifacts, including pottery or materials for making pottery, were buried with the body.

"The Cultural Differentiation of the Maidu," by Dr Roland B. Dixon, came as a sequence to his earlier studies relating to the art of basketry among the various Indian tribes of northern California. He called attention to the rather interesting case of the differentiation of a small Maidu stock into three more or less distinct groups, each of which, to a considerable extent, was isolated from the others. It was suggested that we might see in this differentiation in culture, as well as language, in this single stock, evidence of the forces which have produced the great diversity which has long been recognized to exist in California as a whole.

A paper by Mr E. Lindsey on "Anthropometry, its Relation to Criminology," dwelt on the outward physical characteristics of men to which quantitative methods are applicable. The relations exhibited by these methods are the mathematical ones connecting the observations, and not the real relations of the phenomena themselves. These methods applied to the study of criminals united with the view of the criminal mainly as a moral offender developed by the philanthropists, gave rise to the theories of the so-called Italian school of criminology. This is susceptible of much criticism. To deduce any theory, observations on the convict class must be compared with observations on all other classes of society. Convicts must be compared with non-convicts of similar environment. Anthropometry must provide these data. While there is a correlation between psychical activity and physical structure, the physical is no measure of the psychical function, which can be compared only qualitatively. Criminology, therefore, must embrace both qualitative and quantitative studies; it has no direct relation to criminal law, but should be pursued as a strictly scientific investigation, using both quantitative and qualitative methods.

"The Introduction of the Banana into Prehistoric America" was the subject treated by Dr O. F. Cook. He has found evidence of wide distribution of the plant in pre-Spanish America, though it

was probably introduced from the tropical Pacific islands with which, it is claimed, there are indications of prehistoric communication.

H. Newell Wardle found material for "A Study of Spindle-whorls from Mexico to Colombia" in the U. S. National Museum, the Academy of Natural Sciences of Philadelphia, the Free Museum of Science and Art of the University of Pennsylvania, and the American Museum of Natural History in New York. The distribution and significance of ornamental motifs were briefly considered, but the groups outlined were on the basis of technique, form, and material. Eight groups were recognized for Mexico, and after reference to the spindle-whorls of Chiriqui, attention was called to three strongly characterized types from Colombia, hitherto undescribed.

In a communication of unusual general interest entitled "Origin of Surnames," Dr Anita Newcomb McGee grouped personal names as class names and individual names, corresponding in present usage to forenames and surnames. Brief descriptions of forms of names among primitive and early peoples were given, with a statement of the causes which led to the general use of the class designation as a surname. Greece, Rome, England, Scotland, and Ireland were especially considered, and it was suggested that surnames were probably the same as, or derived from, the old clan names, brought into constant use by the demands of civilization. Anthropologists were asked to record the forms of personal names used by primitive peoples, because they are an expression of the grade of culture which has been attained.

Taking for his subject "Recent Investigations among the Pawnee," Dr George A. Dorsey described one of the rites of an extensive ceremony in connection with a sacred bundle among the Skidi band of the Pawnee which is dedicated to the evening star, the "mother" of the Pawnee tribe. This rite consisted of an offering, to the various gods, of the heart and tongue of the buffalo. An interesting feature brought out in this presentation was that the fire-place made in the tipi during the ceremony is rectangular, and not round, the former being supposed to be the shape of that garden in the west presided over by the evening star, and in which the heat of the sun is periodically renewed.

Conventionalism in primitive art has been treated by many able writers both in Europe and America. In this connection, the work of Prof. Franz Boas is well known. His latest contribution, "Conventionalism in American Art," was read at the Washington meeting. The speaker pointed out that almost all primitive art is symbolic in character, and that even simple geometrical forms are interpreted as having definite meaning. He stated that two explanations are possible — the one in which the designs are considered as conventionalized, realistic forms; the other in which the interpretation is considered as "seeing into the design." The former theory has been a prevalent one for a number of years. On the whole, the tendency to conventionalism is much more strongly developed in purely decorative objects than in ceremonial objects, which tend to be more pictographic in character. By following up the interpretation and form of design among the prairie Indians, it was shown that the areas of style and of interpretation do not coincide; that often in neighboring regions the same design is given a different interpretation; and that, on the other hand, the same idea among neighboring tribes is often expressed by different symbols. This the speaker held to be a proof that the interpretation is not the real explanation of the design, that the design may often be borrowed bodily from neighboring tribes, and that the explanation is fitted to the design. He also pointed out the relationship between the angular painted designs found among the Indians of the plains and those of the Pueblos and even of the ancient Mexicans.

An account of "Progress in Anthropology at Peabody Museum of Yale University" was given by George Grant MacCurdy, and is published in the present issue of this journal.

Instruments for recording speech have been much improved within recent years. Prof. E. W. Scripture, who has made a special study of phonetics, described "The Use of the Gramophone Method for Preserving and Studying Speech." Hitherto the greatest difficulty has been to obtain a lasting record, but this is now accomplished by the new gramophone. A copper mold is made by electroplating, the speech-line being in relief. This is faced with nickel to protect it. A shellac composition is pressed upon the mold with a force of 60,000 to 80,000 lbs., and when the disk is removed it is

a true copy of the original. This is the ordinary commercial gramophone plate. A single matrix may produce 2500 records before the wear is sufficient to interfere with efficiency. The speech-curve, greatly enlarged, may conveniently be traced from such plates. From these curves it is possible to determine most accurately the melody of the voice in speech and song. The importance of making phonetic surveys was clearly set forth. Dialects change and vanish; whole tribes disappear. To furnish an example we need only refer to the paper by Professor Hewett on the "Extinction of the Pecos Indians." Plans are now being matured for an extensive phonetic survey to begin the coming summer.

Mr George F. Kunz presented "Remarks on the Heber R. Bishop Jade Collection," which have been extended and are published elsewhere in this number.

Dr Roland Steiner contributed a paper on "Funeral Ceremonies among the Negroes of Georgia." These people have a custom of putting little pieces of broken plates on the graves of their deceased relatives or friends. An old negro told the speaker that it was to propitiate an evil spirit that came over from Africa with the first negroes who landed in this country. When a negro dies, all the relatives and friends assemble at his house, and messengers are sent to announce the death to the remotest kin. They all assemble at the house that night, where supper is prepared, and keep a vigil over the dead with alternate psalms and prayers. The grave is dug and all twigs that are used in measuring are placed therein. At the grave the coffin is opened in order that those present may view the remains. When the body is deposited in the grave, a "holy circle" is formed, and a dance, accompanied by singing and praying, is performed, sometimes for an hour. Then the minister officiates, but this part of the service does not last very long. The tools used in digging the grave are placed upon it, to remain until the dew has fallen on them — generally over night.

Of Dr Frank Russell's two papers, "Pima Annals" and "Some Practical Problems for the Consideration of American Anthropologists," the former appears elsewhere in this journal, while the latter will be published in the May number of *Education*.

BOOK REVIEWS

The Arapaho. By ALFRED L. KROEBER. (Bulletin of the American Museum of Natural History, Volume XVIII, Part I.) New York: 1902. 8°, 150 pp., 31 plates, 46 figures.

The author of this paper, now holding the chair of anthropology in the University of California, is one of that enthusiastic body of younger workers who have had their training under the able direction of Dr Franz Boas. The present brochure summarizes the results of recent investigations among the three branches of the Arapaho living respectively in Montana, Wyoming, and Oklahoma. The first thirty-five pages are devoted to a general description of the tribe; the rest treats of "Decorative Art and Symbolism," concerning which the author has already published two shorter papers.

Some introductory statements need qualification. We are told that the Arapaho have generally been at peace with the Kiowa and Comanche and at war with their other neighbors, and that their men have generally been described as particularly reserved, treacherous, and fierce. The Arapaho have had an alliance with the Cheyenne from an early traditional period. These two carried on bitter war with the Kiowa, Comanche, and Kiowa Apache until 1840, when peace was made, since which time the five tribes have usually acted together. In all their dealings with the whites, however, the Arapaho and Kiowa Apache as a rule have stood for peace and friendly accommodation, while the others have been hostile and unruly until compelled to terms. The tribal sign for the Wyoming body is inadvertently given as meaning "father" instead of "mother." In explanation of the fact that they have the same word for "white man" and for "spider," it might be stated that the word means, etymologically, "skilful" or "expert." The author is right in inferring that the divergence of the Cheyenne from the main Algonquian body is comparatively recent. It is but little more than a century since they lived on Red River of the North, in close touch with the Ojibwa and Cree.

Several pages are given to a discussion of the relative position of the Arapaho language among the western Algonquian dialects, together with a list of bands and a table of kinship terms. The author asserts that "there are no clans, gentes or totemic divisions among the Arapaho,"

unless possibly among those of Montana. (In a recent personal letter he makes the assertion positive for the California tribes generally.) This is a strong statement, and the present reviewer is not able to say how correct it may be for the tribe in question, but it agrees with what he knows of the Kiowa, and with what Gatschet and Hale have recorded of the Klamath and Blackfeet. On this subject it is about time to accept the testimony of men in the field, even though it may not agree with the Morgan theory of fifty years ago or with the comfortable settlement of desk philosophers. Where the clan system exists in fact or tradition it is so much a part of tribal life that it cannot escape the notice of the investigator. It was general over large areas, but was not universal.

The troublesome mother-in-law tabu, which is found among perhaps all the tribes of the plains and which forbids a man to speak to his wife's mother or ever to come into her presence, is not to be canceled by the simple gift of a horse. If the burden could be lifted by the giving of ponies, it is safe to say that the young men would give half they possess to be rid of it. The matter rests with the matrons of the tribe and with the mother-in-law herself. Should she desire a dispensation, she makes a feast to which she invites certain women of authority. She states the case, which is fully debated, and if their decision is favorable they authorize her to make a ceremonial robe to be given to the young man as a token that the silence is broken; when she has it finished, after months of work, she presents it to him and the tabu is at an end. Some time later he reciprocates with a pony for the extraordinary favor thus shown. This tabu is as strong today as ever, and within the past week the reviewer has seen an educated Cheyenne, the graduate of a Latin school, halt outside a tipi for fear of it. In regard to marriage it might be mentioned that, although the match is arranged by the girl's relatives on the basis of a certain number of presents, they usually consult her own wishes in the matter. The custom in vogue among the crowned heads of Europe does not always prevail among Indians. The so-called purchase is merely a public ratification of the agreement, and the girl would be ashamed to be rated at a cheap price.

We are told that in recounting their warlike deeds men told the truth, because if they lied they would surely be killed by the enemy. A more obvious reason is that the liar would instantly be called to account by some jealous warrior who knew better.

The general impression which we derive from a study of the portion devoted to decorative symbolism is that the author has mistaken the vagaries of individuals for the genuine system existent in the tribe. This

is due largely to the fact that we have been so long taught to believe that the Indian is a man of mystery that we find it hard to realize that he does anything for mere amusement or to gratify his artistic taste. There is a complex and far-reaching Indian symbolism, but it is not usually recorded upon such things of every-day use as moccasins, knife pouches, and parfleche cases, but upon the sacred and ceremonial things—the rattles, drums, gaming implements, and dance costumes, none of which is here represented. As among ourselves, most of this symbolism is in the keeping of the priests and sacred societies. Every Indian on the plains knows that a certain pictured Maltese cross means the morning star, that a sort of tadpole figure means a flying bullet, and that a succession of half-circles means horses traveling. Much beyond this he cannot go, and when asked to explain the lines or bangles or fringes on a moccasin or parfleche, if he be honest, he will say: "They mean nothing—they look pretty that way." If anxious to convey a sense of his own importance as an interpreter of the occult, he can find a meaning for everything, no matter how incongruous the association.

The author, while believing that everything is a symbol, evidently has his own misgivings at times as to the interpretation. Of an awl case, said to represent a lizard, we are told (page 85): "Here, as in other cases, the particular animal represented could not well be recognized, even by an Indian, and that this awl case represents a lizard, and not a snake or fish or rat, is a matter of the individual purpose or interpretation of the maker. Perhaps even a distinct motive or intention for this symbolism was lacking in this person's mind." Again, on a knife-case (page 87), "the symbolism is so incoherent that it must have been secondary, in the mind of the owner, to decorative appearance."

On page 125, after a description of a bag with various patterns interpreted as roads, mountains, hills, tents, and ashes, we find: "The fringe on the bag represents *niitcaantetāinani*, what we do not know; that is, objects out of our possession, or various things too numerous to mention." On another bag (page 130) certain colors represent respectively the earth, paint, and daylight, and "also represent all existing objects of those colors." It must be evident that this is not a system.

In speaking of the obvious inconsistency of the interpretations, the author instances a single figure which was variously explained as "the navel, a person, an eye, a lake, a star, life or abundance (*hiiteni*), a turtle, a buffalo wallow, a hill, the interior of a tent," and says that if the investigation had been carried farther "it is probable that the known number of meanings attached to this symbol would be still larger." He

concludes (pages 144-45): "It thus appears that there is no fixed system of symbolism in Arapaho decorative art. Any interpretation of a figure is personal. Often the interpretation is arbitrary. . . . Where such a wide variability exists and where every individual has right to his opinion, as it were, it follows that it is impossible to declare any one interpretation of a given ornamental design as correct or as incorrect. Even the maker or possessor of an article can give only his personal intention or the signification which he individually prefers."

We are forced to dissent as radically from the conclusion as from the premises. While believing that the majority of the designs here represented have no meaning whatever, but are purely ornamental, we know that there is a fixed and recognized system of symbolism among the Arapaho and that this system exists and is identical in its general principles among all the tribes of the plains. It finds expression not only in design, but also in color, material, and objective arrangement. It is seldom depicted, however, upon things of daily utilitarian purpose, but rather, as we have said, upon the things of sacred and ceremonial use. While it is true that in these later days of the peyote and the Ghost-dance every young man is ambitious to be a dreamer of dreams and to record his visions or his imaginings in some pictograph form, yet the record will always be in accord with the general system and consistent in its analysis.

He may represent a river by a wavy stripe or by a short line, according to the time or surface space at his disposal, but it will always be blue or green, the Indian symbolic color for water. If he depicts a star it may be as a diamond or a circular disk, but if he means the morning star it will always be some kind of cross. If he means a dragonfly the design will be recognized as such in every tribe from Canada to Texas, and will everywhere suggest the same underlying idea of swift flight and agility in evading a pursuer. The whole design will be as consistent in its parts as a well told story.

The subject is the deepest in all Indian life, and the full explanation is to be gathered only from priests and adepts after long acquaintance and aided by detailed observation of some great tribal ceremony, supplemented by a study of the sign-language and pictographs of the plains tribes, the totem poles of the northwest coast, the Aztec codices, the *Midé* rolls of the Ojibwa, and the *Walam Olum* of the Lenapé. When thus investigated it will be found that there was a well-defined system of symbolism practically identical over half a continent.

There are several good pieces of ceremonial description, which show

close observation and investigation. Notable instances are the sacred-bag ceremony of the women in connection with the making of a buffalo robe, and the ceremonial finishing of a decorated tipi. In such case the ritual is conducted by the women, and includes prayers, libation, circuits, and feasting, all under the direction of the priestess of the rite. The more we can get of such material the better. The numerous illustrations, including several colored plates, are all reproduced from specimen objects obtained in the tribe, and are fully up to the high standard maintained by the American Museum of Natural History. JAMES MOONEY.

CHEYENNE AND ARAPAHO AGENCY, OKLAHOMA,
January 15, 1903.

The Night Chant. A Navaho Ceremony. By WASHINGTON MATTHEWS. (Memoirs of the American Museum of National History, vol. vi. Anthropology, vol. v. Publications of the Hyde Southwestern Expedition.) New York: 1902. 4°, xvi + 332 pages, 8 plates, 19 figures.

It is not an easy task to review in a few lines a work of such importance that it must be accorded a leading place among the most notable contributions to our knowledge of Indian ceremony. For nearly forty years Dr Matthews has been an investigator of American ethnology, his first inspiration having been gained, like that of Bourke, Corbusier, Clark, and Scott, while serving in the United States Army on the Indian frontier. His *Ethnography and Philology of the Hidatsa Indians* (1877) is now a classic in ethnologic literature and stands as our only scientific authority on an otherwise almost unknown Siouan tribe. For several years he served in the medical corps of the Army at Fort Wingate, New Mexico, where, largely by means of his own limited resources, he followed the interest aroused in him among the tribes of the two Dakotas, and presented from time to time the results of his studies among the Navaho, one of our most populous as well as least spoiled tribes.

The many obstacles encountered in gathering the material which forms the present monograph, only the student who has pursued investigations of a kindred nature can appreciate; but perhaps only the author himself knows of the difficulties which had to be overcome, during years of physical infirmity, in analyzing and interpreting these mysteries of primitive belief.

The Night Chant, in addition to being the most popular ceremony, is one of the most important rites of the Navaho tribe, for "nearly all the important characters of the Navaho pantheon are named in its myths,

depicted in its paintings, or represented by its masqueraders." It is so intricate and far-reaching that, to use Dr Matthews' words again, "not every one of its priests, even, knows all that is to be known about it; there are different degrees of excellence in their education; one may know some particular song, prayer or observance of which another is ignorant. There are auxiliary rites, not known to all shamans, which are supposed to increase the efficacy of the ceremony according to different indications of Indian mythic etiology. One shaman told me that he studied six years before he was considered competent to conduct his first ceremony, but that he was not perfect then and had learned much afterwards." There is a little wonder, then, that after witnessing many celebrations of the Night Chant, in whole or in part, during nearly eight years' residence in the Navaho country, the study of the ceremony and the collation of the material gathered should have occupied much of the author's spare time during the succeeding twenty-one years. And yet, with characteristic modesty, he adds: "I do not pretend to give a complete account of the ceremony, with all that pertains to it." In view of this frank assertion it is hoped that, among other uses, the memoir may serve as a missionary text-book for those who still believe that all there is to be learned about a tribe may be absorbed during a casual visit or two.

The popular name of the Night Chant is a translation of its native designation *klédze hatál*. The ceremony may be performed only during the frosty season, while the snakes are hibernating, in the same way that the neighboring Pueblos will relate their folktales only during cold weather. The ceremony is designed for healing the sick, and the expenses, which sometimes aggregate three hundred dollars in money and goods, are borne by the patient and his intimate relations. The performance, or rather series of performances, last for nine nights and portions of ten days, and consist of many strange rites in which dramatic personations of no fewer than sixteen gods are represented and in which the laws governing Navaho ceremony are rigidly observed. For example, besides the prescribed season for the performance of the Night Chant, the color symbolism in relation to the cardinal points and the symbolism of sex in relation also to the cardinal directions and to certain natural objects must be recognized, as must a definite sequence in the movements of the participants, laws regulating the making and depositing of the kethawns or sacrificial offerings and messages to the gods, the manufacture and placing of objects with reference to their butts and tips, the measurement of objects used in the ceremony in accordance with established standards, and a thousand and one other things of apparently trivial importance, but

which to the Indian mind are of such moment that a false move might put a stop to the proceedings for a day or a night.

The first sixty-three pages of the memoir are devoted to general observations and a review of the elements of the ceremony. The description is presented in such simple and graphic style that a child might read it with interest, and gain, without passing to the second part ("Rites in Detail," pages 67-155), quite a comprehensive idea of what the Night Chant is, why it is performed, and a general notion of the fearful and wonderful working of the Indian mind. It is this simple, straightforward, unpretentious way that Dr Matthews has of relating his story, however intricate the subject, that has made his writings so enjoyable both to the professional student and to the layman. There is nothing in the work which can arouse the suspicion that the author knows not whereof he speaks—he states as a certainty only that of which he has personal knowledge, and if doubt exists in his mind on any point, the reader is so informed.

Parts III and IV (pages 159-265, 267-304) treat of "Myths" and "Texts and Translations," respectively, the latter consisting of songs and prayers with native texts and interlinear translations. Throughout the work the paragraphs are numbered for ready reference in the explanatory notes which comprise pages 307-316. The index (pages 307-332) is a model in every respect, and this is true of the plates, particularly those in color, which illustrate dry-paintings, masks and other ceremonial paraphernalia, etc. The entire work is a credit to the author, to the Museum under whose auspices it is published, and to the Messrs Hyde through whose liberal patronage science has been so substantially benefited.

The author makes what appears to be an unnecessary apology for his spelling of the name of the tribe whose ceremony he describes. The meaning of *Navaho* is not known, although many attempts have been made to define it. It is not of Spanish derivation, for the first Spaniards to employ the name did not use a form of spelling which would justify such a conclusion; and indeed Spanish writers record even more forms of the tribal designation than there have been modern interpretations of its meaning. Under the circumstances the author is fully warranted in his adoption of the Anglicized "Navaho" in preference to the most popular of the Spanish forms of the name, the pronunciation of which has led so many astray; and as he is the leading authority on the Navaho tribe, it is more than likely that ethnologists in general will continue to follow his example, as the Bureau of Ethnology and the Indian Bureau have already officially done.

F. W. HODGE.

A Manual for Physical Measurements, for Use in Normal Schools, Public and Preparatory Schools, Boys' Clubs, Girls' Clubs, and Young Men's Christian Associations, with Anthropometric Tables for Each Height of Each Age and Sex from Five to Twenty Years, and Vitality Coefficients. By WILLIAM W. HASTINGS, Ph.D., Chair of Anthropometry and Physical Training in the International Young Men's Christian Association Training School, Springfield, Mass. 1902. 4°, xviii, 112 pp., ills.

Dr Hastings states that "the primary object of this manual is to explain the use of the accompanying Anthropometric Tables and the method of organization of observers for the physical examination of *large numbers of children*. The primary object of both Manual and Tables is propaganda of systematic physical training." Attention is called to the value of physical measurements and the fact that physical well-being is the basis of mental efficiency. The necessity for measurements is pointed out and the practicability and desirability of examinations twice a year demonstrated. Examination blanks are submitted and instructions to observers are given.

Dr Hastings very clearly shows the need of adaptation of exercise to the individual during the formative period of public school life. He lays stress on the status of the vitality of the individual, discoverable by means of the examinations, in connection with mental work, showing that the "director's work is supplemental to that of the physician, and not in any sense a substitute for it, except so far as by the prevention of disease he renders the work of the physician unnecessary."

The tables are based on observations made upon large series of Nebraska school children. From these the average type for each height of the age, and vitality coefficients, are given of both sexes.

The Manual succeeds most admirably in its avowed purpose. Its wide adoption in schools would prove of inestimable value to "the coming man." Incidentally, it would do away with the misapprehensions that exist in some quarters as to the meaning and value of the physical examination of school children.

FRANK RUSSELL.

PERIODICAL LITERATURE

CONDUCTED BY DR ALEXANDER F. CHAMBERLAIN

[NOTE.—Authors, especially those whose articles appear in journals and other periodicals not entirely devoted to anthropology, will greatly aid this department of the *American Anthropologist* by sending direct to Dr A. F. Chamberlain, Worcester, Massachusetts, U. S. A., reprints or copies of such studies as they may desire to have noticed in these pages. — EDITOR.]

GENERAL

- Achelis (T.)** Ethnology and the science of religion. (Int. Quart., Burl., Vt., 1902-03, VI, 305-329.) There is a real spiritual unity of mankind, — "the nearer we approach the beginnings of civilization, the more do we meet with a surprising agreement in custom, usage, belief, thought and art." Mental activity and the personal ego "do not by any means coincide; the latter is only a small segment of the former." Religion, mythology, law, custom, art, "are no invention of individuals, no products of great personalities, but socio-psychical phenomena in the organic development of the race." Religion is a social function. Even for primitive fancy and speculation, God and the world are closely united. Mythology includes the "totality of the conception of the world as framed by primitive man." Early ritual is largely of a material sort.
- von Adrian (F.)** Die Siebenzahl im Geistesleben der Völker. (Mitt. d. anthr. Ges. in Wien, 1902, XXXII, 226-273.) An exhaustive and valuable study of the number seven in folk-thought. The abstract of which this is the full text was noticed in the *American Anthropologist*, 1901, N. S., III, 175.
- Arnold (R. F.)** Die Natur verrät heimliche Liebe. (Ztschr. d. Ver. f. Volksk., Berlin, 1902, XII, 155-167.) The first part of a study of "the betrayal of secret love by nature" in folk-song. The German versions of ten folk-songs (modern Greek, Epirote, Karpathian, Cretan, Servian, Russian, Finnish, Esthonian, Roumanian) are given. This theme seems to be somewhat of a favorite in the folk-poetry of the Balkan peninsula.
- Baum (H. M.)** John Wesley Powell. (Rec. of Past, Washington, 1902, I, 325-326.) Brief sketch, with portrait, of "a notable and memorable life."
- Boas (F.)** The ethnological significance of esoteric doctrines. (Science, N. Y., 1902, N. S., XVI, 872-874.) Author appeals for the study of the exoteric phenomena of primitive social and religious life. The exoteric doctrine is the more general ethnic fact. Ethnology deals rather with the masses than with the exceptional man.
- Bonnier (P.)** Les erreurs de la théorie classique de phonation. (Rev. Scient., Paris, 1902, 4^e s., XVIII, 513-517.) Protests against the theory of the voice current in manuals and in teaching generally. The chief errors are pointed out.
- Borgese (G. A.)** Giganti e serpenti. (Arch. p. Trad. Pop., Palermo, 1901 [1902], XX, 506-520; 1902, XXI, 90-103.) These first two sections of an elaborate study of giants and serpents treat of the "typical beast" under all aspects: Classic monsters and serpents (from the Chaldean Tiamat to Cerberus) polycephalic and multimembrate creatures, flames, smoke, and hissing; regeneration of cut-off parts; eggs of monsters; metamorphosis into serpents; men-serpents and "white women"; the Sicilian dragon, an almost exclusively human (monster). The serpentine monster is a creature apart from the other animals.
- Capitan (L.)** Association française pour l'avancement des sciences. Congrès de Montauban (Août 1902). Compte rendu de la Section d'Anthropologie. (Rev. de l'Éc. d'Anthr. de Paris, 1902,

XII, 334-349.) Brief abstracts of papers read before the Anthropological section of the French Association for the Advancement of Science at the Montauban meeting in August, 1902. The great majority of topics considered are archeological or prehistoric.

Collection (The) of folk-lore. (Folk-Lore, London, 1902, XIII, 297-313.) Brief communications on the collection of folklore, its difficulties and its needs, by S. O. Addy ("perseverance and setting people at ease"), Charlotte S. Burne (belief more difficult to explore than legend; historical method needed), W. Crooke (experience in India; key to secret beliefs hard to find), W. Skeat (Malay experience; art of folklorist much the same everywhere), C. C. Seligmann (Torres straits; medical training of great advantage in investigation of native magic and medicine), J. Roscoe (Uganda; opposition of Christian converts to speak of old beliefs and practices).

Crooke (W.) The lifting of the bride. (Ibid., 226-251.) Discusses, with numerous bibliographical references, the "lifting of the bride" and allied customs in Northumberland and other parts of England, India, etc. The author considers that the "petting stone" rites are probably "fertility charms," while those connected with the threshold (over which the bride is carried), "are based either on the same belief, or are intended as protections against various forms of evil influences which beset the bride at the commencement of her married life." The spring and autumn "lifting" rites, *e. g.*, the Easter "heaving" of central and northern England, are probably akin to the Saturnalia ceremonies.

Dieterich (A.) Himmelsbriefe. (Hessische Bl. f. Völk., Giessen, 1902, 19-27.) Additional data on "letters from heaven." These appear in Talmudic literature, the tale of the healing of Phylisios (in Pausanias), etc., and in the Middle Ages were believed to possess great talismanic power; were used as amulets, etc. On pp. 24-25 are given extracts from "the letter which Pope Leo sent to King Charles from heaven" in 1451 A. D.

Dreus (P.) Religiöse Volkskunde. (Ibid., 27-29.) Employing a 1595 A. D. version of the Lord's Prayer as used

by the Wurtemberg folk, the author points out the importance of the expression of the "folksoul" in the variations of this and other prayers, verses, formulae, rites and ceremonies of the church, etc., in so far as they have become popular or entered into the lives of the people. Such data come under the rubric of "religious folklore."

d'Enjoy (P.) Honneurs civils et militaires en France et en Chine. (Bull. et Mém. Soc. d'Anthr. de Paris, 1902, v^es., III, 316-323.) Treats of the Legion of Honor, the Chinese orders of the meritorious, the wise, the skilful, the active, the noble, the military distinctions of Kong, Hân, etc. The loss of title by reason of faults and crimes is also noted.

Ferraro (G.) Toccaferro. (Arch. p. Trad. Pop., Palermo, 1901 [1902], 446-456.) Concluded from last number. Treats of iron in folklore and mythology (implements, arms, etc.), chiefly from a linguistic point of view.

Foy (W.) Ueber Schilde beim Bogenschiessen. (Globus, Brnschw., 1902, LXXXI, 281-285.) Résumés, with 2 figures and bibliographical references, data concerning the use of shields by the exposed side in the case of shooting with bows and arrows. Bow-shields occur in various parts of Melanesia (British and German New Guinea, the British Solomon islands), and the East Indian archipelago (Flores, Timor, and as far as Aru).

Goblins. (Folk-Lore, Lond., 1902, XIII, 183-187.) Brief articles by A. Lang, on a "kind of banshee" in Chitral, Elizabeth Taylor on the Nidagrisur (spirit of an unbaptized child), etc., of the Farøe islands, and William Martin on fairies and the *lanonshaa* (or female spirit) in the Isle of Man.

Haddon (A. C.) Evolution in art. (Bull. Free Mus. Sci. and Art, Phila., 1902, III, 239-248.) General discussion, with particular reference to Malayo-Polynesians and the use of decoration for purely magical purposes. Among the topics briefly touched upon are life-history of art, unconscious evolution, effects of form and material, factor of utility, suggestion, expectancy, art and religion, prophylactic and protective rôle of art, totemism, etc. According to Dr Haddon "suggestion and expectancy are the

dynamic and static forces acting on the arts of design; the former initiates and modifies, the latter tends to conserve what already exists. Most of the ideas here expressed will be found developed at greater length in the author's book *Evolution in Art* (London, 1895).

Hanotte (M.) *Recherches sur la trigonocephalie.* (*L'Anthropologie*, Paris, 1902, XIII, 587-607.) After a brief general historical introduction, Dr Hanotte gives, with figures and tables of measurements, the results of the study of 11 trigonocephalic crania (fetuses and children 6, men 3, women 2) from various sources, and his opinions on the origin of this deformation. Trigonocephaly "results from two entirely different modes of deformation—arrest of development of the frontal bone, and compensatory dilatation of the brain." It is "a deformation due to premature synostosis of the medio-frontal suture supervening in intra-uterine life from undetermined pathological causes." It is compatible with life and with normal cerebral development, since "the brain seeks in the posterior and lower part of the skull the space it has been forced to lose by the arrest of development of the forehead."

Harvest Customs. (*Folk-Lore*, Lond., 1902, XIII, 177-180.) Items from Berwickshire ("cutting the kirm," cutting a snail while mowing, etc.), by Alice B. Gomme; from Oxfordshire ("he's got the little white dog" = "lazy"), by E. H. Binney; and from the same shire (drawing young men dressed as women on the last load in harvest-time) by Cora J. Jewitt.

Henderson (A. E.) *The Imperial Ottoman Museum at Constantinople.* (*Rec. of Past*, Wash., 1902, I, 291-304.) Describes, with 21 illustrations, the chief objects in the museum. Among these are the Sidonian sarcophagi, the sarcophagus of Alexander, the Lycian sarcophagus, an Egyptian sarcophagus of basalt, the tablets and other objects from Nippur, the Hercules of Cyprus, a serpent's head from Platea, Greek statuettes, vases, etc., the harpist of Baluk Hissar, statues of the Roman period, the Siloam inscription, and an inscription from Herod's temple, etc.

Herman (O.) *Knochenschlittschuh, Knochenkuße, Knochenkeitel. Ein Beitrag*

zur näheren Kenntniss der prähistorischen Langknochenfunde. (*Mitt. d. Anthr. Ges. in Wien*, 1902, XXXII, 217-238.) In this article, with a plate and 32 figures, the author discusses in detail, with reference to Hungary in particular, the bone-skate, the bone sleigh-runner, bone net-sinkers (a Hungarian specialty), etc., as explaining the condition and use of many of the long-bones found in prehistoric "stations." In Hungary and parts of Germany sleds for standing upon, as well as for sitting, are found, shod with bones. A sled made of the jaw-bones of a horse is figured on p. 231. With skates, poles are sometimes used, and the primitive form of the skate or sled with sails is seen on p. 222. This paper is of great interest to those concerned with the folk-development of invention.

Josef Florimont Herzog von Loubat. (*Globus*, Brnshwg., 1902, LXXXI, 197-199.) Brief biography of the Duc de Loubat, with portrait.

Kahle (B.) *Ueber Steinhäufen insbesondere auf Island.* (*Ztschr. d. Ver. f. Volksk.*, Berlin, 1902, XI, 89-96, 203-210.) First two sections, with three figures, of a discussion of stone-heaps, cairns, etc., with special reference to Iceland. Stone-heaps as guide posts, grave memorials, altars (the *öbo* of the natives of Mongolia, etc.), protection against demons and spirits, stone-throwing as an offering, casting stones at the foot of trees, into springs and other waters, stoning criminals, etc., are considered.

ten Kate (H.) *Die Pigmentflecken der Neugeborenen.* (*Globus*, Brnshwg., 1902, LXXXI, 238-240.) Discusses recent literature on the subject—Baelz, Matignon, Kohlbrugge, etc.—and gives result of author's own observations in Hawaii and Japan. The Japanese, curiously enough, have no special name for these "pigment spots." Although the "spots" generally disappear slowly in early life, they sometimes persist to adult age. It has even been found in full-blooded Europeans. In the present state of the evidence Dr ten Kate considers its value as a race-mark an open question.

Köhler (W.) *Zu den Himmels- und Höhlenbriefen.* (*Hessische Bl. f. Volksk.*, Giessen, 1902, I, 143-149.) Calls attention to the similarity between the

phraseology of a "letter from heaven" of the sixteenth century and a letter of Martin Luther; notes the existence of "letters from heaven" in evangelical circles at this time; and gives an account of the "devil's letter" of 1351.

Kollmann (J.) *Pygmäen in Europa und Amerika.* (Globus, Brnswg., 1902, LXXXI, 325-327.) Brief discussion of the question of the occurrence of pygmies in Europe and America. The finds of Cave aux Fées (near Breuil, Seine-et-Oise), Mureaux, Châlons-sur-Marne, and in various parts of Germany (Worms, Egisheim, in Silesia, etc.), Switzerland (Schaffhausen), and Italy are referred to. Undoubted evidence of the existence of pygmies in America is yet lacking, although the author lays stress on the "pygmies' bones" from the burial-places of Ancon and Pachacamac, and thinks that Ehrenreich and ten Kate's anatomical and anthropometric data prove the existence in the Argentina-Brazil region of dwarfs among the taller races. The pygmies, Kollmann believes, represent the original human stock out of which, by mutation, the tall races have developed.

Lasch (R.) Nachtrag zur Liste der Flutsagen. (Mith. d. anthr. Ges. in Wien, 1902, 26-27.) Adds to the list given in Winternitz's article of notes on the deluge-legends of the Sinhpoo (Assam), the Sangir islanders (Celebes), the Bicolos (Philippines), the Moros (Sulu), the natives of Yap (Caroline islands), and the Saulteaux (North America). The author wrongly affines the Saulteaux (an Ojibwa people) with the Tinné.

Lejeune (C.) Le culte des morts au XX^e siècle. (Bull. et Mém. Soc. d'Anthr. de Paris, v^e s., III, 1902, 97-111.) Treats briefly of instinctive and hereditary survivals of beliefs and practices connected with the cult of the dead. Taking off the hat or making the sign of the cross before a coffin; funeral ceremonies, masses for the dead; decoration of graves; mourning; visiting the cemetery; the honors shown to the dead slain by enemies of the country, etc., are considered. The author concludes that "the cult of the dead is the best of religions and the only one I wish to exist." Our ancestors it is who have made us what we are. But such a religion is capable of transformation.

Lemke (Elizabeth). Die Eibe in der Volkskunde. (Ztschr. d. Ver. f. Volksk., Berlin, 1902, XII, 25-38, 187-198.) Treats of the names (alphabetic list in various European languages) of the yew-tree, place-names and personal names derived from them, the use of the wood (runes, bow, spoons, vessels of diverse sorts particularly in Scandinavian burial-places, goblets, etc. — a list of uses is given on p. 37), the yew in medicine (wood, bark, leaves, fruit — long regarded as poisonous); as a symbol of mourning, death, and the lower world; as a sacred tree in Teutonic and Celtic mythology; in church-yards and cemeteries; as a Christmas tree; yew-twigs as hat-ornaments, old yew trees, etc.

Loisel (G.) Biologie et morale. (Rev. Scient., Paris, 1902, 4^e s., XVIII, 449-456.) Reflections, suggested by Grasset's *Les limites de la Biologie* (Paris, 1902). Contrary to Grasset, Loisel believes that science can furnish the basis for a new doctrine, "harmonizing in their best the spirit of Hellenism, the spirit of Christianity, and the spirit of the Revolution — beauty, love, justice."

Lombroso (C.) Why criminals of genius have no type. (Int. Quart., Burlington, Vt., 1902-1903, VI, 229-240.) Treats of Sardinian and Calabrian brigand-chiefs; Holmes ("the most considerable and the most modern criminal of the nineteenth century"); Tiburzi, the famous brigand; and other Italian criminals of note. In criminals of genius, "the type is often lacking because the lines of genius which belong to the greater evolutions of humanity tend to overshadow the hereditary traits of the criminal." Sometimes, however, the "prestige of genius" makes us fail to see the type. Again, what the face conceals the brain reveals. Anomalies of cerebral and cranial structure are present, which only an autopsy can disclose.

Lowenthal (V.) Qu'est-ce que la dépopulation? (Rev. Scient., Paris, 1902, 4^e s., XVIII, 109-115.) Discusses the past and present signification of the term *dépopulation*, with numerous references to authorities.

Mac Ritchie (D.) Zwerge in Geschichte, und Ueberlieferung. (Globus, Brnswg., 1902, LXXXII, 101-103.) Résumés data in article noticed in *American Anthropologist*, 1903, N. S., IV, 537.

- Morgan (C. L.)** The beginnings of mind. (Int. Quart., Burlington, Vt., 1902-1903, VI, 320-352.) Some dim form of expectation would seem to be "the earliest manifestation of consciousness in the very beginnings of mind." Mind is a product of evolution if "the question of the ultimate origin of consciousness is excluded, and we are only dealing with the genetic or proximate origin of higher from lower phases of mentality." Intelligence has been a factor in the evolution of animal races and species.
- von Negelein (J.)** Das Pferd im Seelenglauben und Totenkult. (Ztschr. d. Ver. f. Volksk., Berlin, 1902, XII, 14-25.) Second section. Treats of horse and funeral processions, connection of horse and rider after death, house-spirits and horses, horse-hair, horse's head, etc., in folklore, metamorphoses of witches into horses, sexual relations of witches with horses, hippic marks of their offspring, ride of the devil on "witch-horses," hippoform women as soul-stealers, giant on white horse, etc.
- Der Individualismus in Ahnencult. (Zeitschr. f. Ethnol., Berlin, 1902, XXXIV, 49-94.) Detailed study of the development of individualism, in relation to ancestor-worship, with numerous bibliographical references. Among the topics treated are: Reproduction and genealogies, ideas about the dead, gods as heroes and heroes as gods, the humanizing of the superhuman, man as male rather than as human being, man's relation to wife and child, heredity, food of the dead, physical and psychical characteristics of spirits, dwarfs, etc., the house and hearth as the home of spirits and ancestors, fire and its religious associations, magic might of ancestors, weather prophets. Christianity and shamanism, unbaptized children, sense of property, reliquary-cult, property and soul, mother and child, development of ethical factor, ensoulment of man, woman, child, and progress of their individualism, child in relation to property and religion, re-birth partial and complete (first the few, then the many), the underworld and the world of the dead, Paradise and heaven, "snatching away" by death, the father-cult, agriculture and war, state-religion, art and individualism.
- Neger (F. W.)** Ueber Ursprung Geschichte und Verbreitung der Kokonusspalme. (Globus, Brnschw., 1902, LXXXII, 91-92.) Argument for the American origin of the coconut tree. Résumé from O. F. Cook's *The Origin and Distribution of the Cocoa Palm* (Washington, 1901).
- Nicole (P.)** Anthropologie religieuse: *Deus Sol.* (Bull. et. Mém. Soc. d'Anthr. de Paris, 1902, v^e s., III, 325-333.) General discussion of religious ideas about the sun as deity in various parts of the world, savage and civilized, in the past and at the present time. The nativity of the sun, his triumph, the sun with the ancient Egyptians and the early Christians, Mithraism, etc., are briefly considered.
- Novicow (J.)** National antagonisms, an illusion. (Int. Quart., Burlington, Vt., 1902-1903, VI, 409-434.) Author argues that the new conditions (inventions, means of communication, instruction, etc.), have made "the association of all mankind" not only possible, but inevitable. The ideals of modern militarism and commercialism, Tolstoi's argument for "restriction," the protective system, colonial and political conquest, are discussed. The fact that "we are no longer ignorant as were our rude ancestors" makes it certain that the nations will soon be conscious of their solidarity, which even now exists, though not felt.
- Papillault (G.)** Genèse et connexions de quelques muscles de la mimique. (Rev. de l'Éc. d'Anthr. de Paris, 1902, XII, 201-204.) After noting that the disposition of the facial muscles places the gibbon below the other anthropoids, the author gives, with a figure, the results of his examination of the facial muscles of two gibbons (*Hylobates leuciscus* and *H. leucogenys*). He considers that Darwin's theory of the production of facial expression by the association of (useful) habits after their function has ceased is supported by anatomical facts.
- Pitré (G.)** Sur la nécessité d'une bibliographie des traditions populaires. (Arch. p. Trad. Pop., Palermo, 1901 [1902], 538-539.) Brief appeal for an international bibliography of folklore.
- Reinach (S.)** Le roi supplicié. (L'Anthropologie, Paris, 1902, XIII, 621-627.) Discusses the resemblances between the treatment of the king of the Saturnalia at Rome (represented in some way by the

modern carnival), the ceremonies of the Babylonian Sacra, the "king-making" of Jesus by the Roman soldiery, etc., questions raised by certain passages in Frazer's *Golden Bough*, the writings of Wendland, Cumont, etc.

- L'erreur de Malthus. (Ibid., 628-629.) Résumés the conclusion of Brentano's *Volkswohlstand und Wissenschaft*, after the *Nation* (N. Y.), 1902, II, 221 ff.

Robin (P.) Un nouveau spiromètre. (Bull. et Mém. Soc. d'Anthr. de Paris, v^e s., III, 1902, 179-180.) Brief description, with figure, of a new spirometer, which has devices for avoiding contagion, etc.

- Appareil pour mesure l'acuité auditive. (Ibid., 209-210.) Brief description, with figure, of audiometer of a simple type.

Shaler (N. S.) Faith in nature (Int. Quart., Burlington, Vt., 1902-1903, VI, 281-304.) Discusses the concepts of *natural law*, *natural selection*, etc. Author inclines to limit the sphere of natural selection, and argues for a new conception of "natural law," in accordance with which "the brutal suggestions of the mechanical view of nature" are cleared away and we realize that "the unseen is a realm of unending and infinitely varied originations."

Steinmetz (S. R.) Die Bedeutung der Ethnologie für die Soziologie. (Vrtl.-hrss. f. wiss. Philos. u. Soc., Leipzig, 1902, XXVI, 423-446.) Discusses the province and problems of sociology, significance of ethnology apart from evolution, analogy between our ancestors and primitive peoples of today, position of primitive peoples, special advantages of ethnology. The author warns against the assumption that everything discoverable among primitive peoples has occurred at some stage of the previous existence of the civilized races. All that seems primitive is not always so.

Stieda (L.) Einige innere somatische Degenerationszeichen bei Paralytikern und Normalen. (Biol. Cbl., Leipzig, 1902, XXII, 689-700.) Résumés Næcke's article with this title in the *Zeitschrift für Psychiatrie*, 1901, LVIII, 1009-1078, giving the results of the examinations of 212 bodies (normal 108, paralytics 104). All peculiarities of the lungs, heart,

spleen, kidneys, and liver were specially investigated, the other organs less so. The conclusion reached is that an extraordinarily large variation of these organs exists. The importance of so-called "degeneration-stigmata" (largely pathological) is less than commonly supposed, and the psychic element rather than the purely physical factors are to be emphasized.

Strack (A.) Volkskunde. (Hessische Bl. f. Volksk., Giessen, 1902, I, 149-156.) General discussion of the nature and objects of folklore. According to the author, "folklore is the investigation, statement, and explanation of all forms of life and intellectual phenomena that unconsciously proceed from the natural association of a people and are conditioned by it."

Thieullen (A.) Technologie néfaste. (Bull. et Mém. Soc. d'Anthr. de Paris, 1902, v^e s., III, 212-227.) Discusses, with 2 figures, the question of "retouched" stones. M. Thieullen offers a prize of 1,000 francs to the first person reproducing approximately, with the tools of primitive man, certain flints (dimension, thickness, forms, cut, etc.). See *American Anthropologist*, 1902, N. S., IV, 523, 545.

Verneau (R.) Discours sur Ch. Letourneau, avec portrait. (Bull. et Mém. Soc. d'Anthr. de Paris, v^e s., III, 1902, 168-175.) Address on the life and works of the late Charles Letourneau, with portrait.

Vinson (J.) La science du langage. (Rev. de l'Éc. d'Anthr. de Paris, 1902, XII, 156-167.) Discusses the problems of linguistic science, the evolution of language, etc.; the differences between the theological and the scientific schools are pointed out, and primitive tongues, child-language, writing, "universal languages," teaching of languages, etc., briefly considered. Dr Vinson hints at an ultimate prevalence of English as a sort of world speech, having no faith in *Volapük*, the "blue language," Esperanto, etc. He also approves of the "Roberston method" of teaching languages.

Volkov (T.) Sur quelques os "surnuméraires" du pied humain et la triphalangie du premier orteil et du pouce. (Bull. et Mém. Soc. d'Anthr. de Paris, 1902,

v^e s., III, 274-296.) Treats, with thirty-one figures of supernumerary bones of the human foot (Os trigonum, external tibial, secondary cuboid, double first cuneiform, intermetatarsal bone) and triphalangy of the big toe and thumb.

Winslow (W. C.) Amelia Blanford Edwards. (Rec. of Past, Washington, 1902, I, 227-231.) Brief account of Miss Edwards' life and works, with portrait.

Wünsch (R.) Aus der Kinderstube. (Hessische Bl. f. Volksk., Giessen, 1902, I, 134-137.) Discusses the mother's blowing on the child's hurt finger, etc., and "driving away" the pain, a relic of exorcism and demonology.

Zachariae (T.) Durchkriechen als Mittel zur Erleichterung der Geburt. (Ztschr. d. Ver. f. Volksk., Berlin, 1902, XII, 110-113.) Treats of the Persian custom, reported by Pietro della Valle in 1674, of having a pregnant woman crawl under a camel, and kindred practices.

EUROPE

Arbo (C. O. G.) Hat in dem skandinavischen Norden keine neue Einwanderung statt gefunden? (Int. Cbl. f. Anthr., Stettin, 1902, VII, 193-195.) Protests against the theory that since the stone age no new immigration into the Scandinavian north has taken place. The archeological and craniological data, ancient and modern, indicate the presence of two ethnic types not at all contemporaneous in their origin. The type of the first iron age resembles that of the German *Hügelgräber*, that of the later iron age the type of the German *Reihengräber*, the latter representing the Viking invasion.

Armashevsky (P.) Human remains below the löss of Kiev, Russia. (Rec. of Past, Washington, 1902, I, 475-478.) Translation, with one figure, from report of author for Seventh International Geological Congress, St Petersburg, 1897. See *American Anthropologist*, 1901, N. S., III, 560.

Ashta (N.) und **Traeger** (P.) Das Gewohnheitsrecht der Stämme Mi-Schko-drak (Ober-Skutariner-Stämme) in den Gebirgen nördlich von Skutari. (Vehr. d. Berl. Ges. f. Anthr., 1902, 265-266.) Continued from last volume. Treats of the oath as a legal instrument among the more or less primitive Skutari tribes.

Bacher (J.) Von dem deutschen Grenzposten Lusérn im wälschen Südtirol. (Ztschr. d. Ver. f. Volksk., Berlin, 1902, XII, 172-179.) Continued from previous volume. Dialect text and German rendering of items 67-142 of folk-sayings and beliefs relating to events of daily life, mental phenomena, luck, bodily qualities, modes and peculiarities of living, work and wages, etc.

Balladoro (A.) Domande facete ed indovinelli Veronesi. (Arch. p. Trad. Pop., Palermo, 1902, XXI, 41-47.) Dialect texts of fifty-three facetious questions and riddles from Pacengo on Lake Garda. The sexual *double entendre* is plain enough in some of these.

Bartels (M.) Märkische Spinnstuben-Erinnerungen. (Ztschr. d. Ver. f. Volksk., Berlin, 1902, XII, 73-80, 180-187.) First two sections of an interesting article embodying the spinning-room recollections and related lore of an old peasant woman of Utzdorf in the Potsdam district. Domestic life, household affairs, dance and song, spinning and the spinning-wheel (with some detail) are considered. Many specimens of the songs sung—some of the chief topics are love and falsity in love, death and its premonitions, happy and unhappy love, virtue and its reward, all with the undercurrent of melancholy necessary to amuse a merry company—are given, with explanatory notes and references to comparative literature. Schiller's *Sehnsucht* seems to have crept in among these songs.

Baudoin (M.) Le polissoir ou pierre, à rainures de la Brélaudière à l'Aiguillon-sur-vie, Vendée. (Bull. et Mém. Soc. d'Anthr. de Paris, 1902, v^e s., IV, 182-205.) Detailed account, with 10 figures, of the grooved stone or "polisher" of Brélaudière in the Vendée. Some of the grooves, the author thinks, may be of the nature of very rude inscriptions.

Blind (E.) Gynäkologisch interessantes Ex-voto. (Globus, Brnswgw., 1901, LXXXII, 69-74.) After brief historical introduction (Stone age, Egypt, Greece, Rome), the author discusses the toad-form of the uterus *ex-voto* in ancient and modern times. Wax and iron *ex-votos*, more or less rudely in a form of a toad, are still common today in Tirol, Carinthia, Upper Bavaria, Alsace, etc. The article is provided with nine figures and

numerous bibliographical references. The connection of the toad, a night-animal, and its very ancient relations in folk-thought with the organs of generation are pointed out.

Bloch (A.) *Considérations anthropologiques sur la Corse actuelle ancienne et préhistorique.* (Bull. et Mém. Soc. d'Anthr. de Paris, 1902, v^e s., III, 333-363.) In this article, with numerous bibliographical references, Dr Bloch treats of modern Corsica (physical types), ancient Corsica (résumé of data in classical authors, early historians, etc.), prehistoric Corsica (stone monuments, funerary urns, skeletons and human bones, *Lagomys corsicanus*, etc.). He considers that the Corsicans are of Iberian, or rather Ibero-African, origin. The mountaineer Corsicans seem to be taller and less brunette in type than those of the plain. The mode of burial in urns may have come from Spain. The antiquity of some of the remains of prehistoric man in Corsica is proved by the presence of bones of *Lagomys corsicanus*.

Bolte (J.) *Zum deutschen Volksliede.* (Ztschr. d. Ver. f. Volksk., Berlin, 1902, XII, 101-105, 215-219.) Comparative and explanatory discussion of eight folk-songs and dance-melodies: *Susanna, wilt du mit? Das Mädchen und die Hasel, Das Wertshaus am Rhein, Schäfflertanz, Der heimkehrende Soldat, Vom andern Land, Göttingen dance-song.*

— *Italianische, Volkslieder aus der Sammlung Hermann Kestners.* (Ibid., 57-65, 167-172.) Gives Italian text, German translation, and music of five folktales—"The Love Test," "The Temptation," "Fair Cecilia," "The Marriage of the Grasshopper and the Ant," "And if Heaven were Paper"—collected in Rome, Palermo, and Catania, 1832-1836. Variants are indicated or given and bibliographic references of an inclusive kind appended.

Bonnemère (L.) *Remarques sur le patois angevin.* (Bull. et Mém. Soc. d'Anthr. de Paris, 1902, v^e s., III, 205-206.) The author points out some resemblances between Anjou and England in the way of festivals (Valentine's day), language (the use of the name Lionel, the expression *quel un!* = What a one! and the like). Before *l* and *r* in Angevin *e* becomes *a* (*farme* = *ferme*).

Boulin (M.) *La caverne à ossements de Montmaurin, Haute-Garonne.* (L'Anthropologie, Paris, 1902, XIII, 305-319.) Gives, with 8 figures (teeth, etc.), the results of the authors of the bones in the breccia and those (more recent) in the entrance of the bone-cave of Montmaurin on the confines of the department of Haute-Garonne and Gers. This cave has yielded new forms for the Quaternary fauna of the Pyrenees, the *Machairodus latidens* and the *Hyena brunnea*. The two "fillings" of the cave, with their corresponding fauna, are easy to distinguish. There were no human remains present.

Breuil (L'Abbé). *L'Âge du bronze dans le bassin de Paris.* (Ibid., 467-475.) Brief descriptions, with 2 figures, of objects of metallurgy, ingots, molds, waste-stuff, hammers, anvils, forged bars, pieces of copper objects, instruments, etc.), and wood-work (chisels, gouges, etc.). Continued from vol. XII.

Brückner (A.) *Neuere Arbeiten zur slavischen Volkskunde.* (Ztsch. d. V. f. Volksk., Berlin, 1902, XII, 228-237.) Brief reviews of recent works on Slavonic ethnology and folklore—books and periodical literature. Bibliography, archeology, place-names, folk-speech, village and country life, folk-songs, etc., are some of the rubrics briefly treated.

Bünker (J. R.) *Das Bauernhaus am Millstätter See in Kärnten.* (Mitth. d. anthr. Ges. in Wien, 1902, XXXII, 12-103, 239-273.) Detailed description, with 80 figures, of the peasant house of the Millstatt lake region in Carinthia. All aspects of the house, its divisions, furnishing, ornamentation, etc., are considered, making the article a notable addition to the literature of the subject.

Calvia (G.) *Leggende popolari Sarde del Loguduro.* (Arch. p. Trad. Pop., Palermo, 1902, XXI, 61-71.) Seven brief and one rather long legend concerning Jesus, from Sardinia, in literary Italian. In most of them St Peter figures also, and in one the saint's mother is a magician who plots against Jesus.

Capitan (L.) et Breuil (H.) *Les gravures sur les parois des grottes préhistoriques. La grotte de Combarelles.* (Rev. de l'Éc. d'Anthr. de Paris, 1902, XII, 33-46.) More detailed account, with 8 figures, of the pictographs of the Combar-

elles grotto. The technique of these wall-drawings is identical with that of the engraved bones, and they seem almost to represent pictures made *de visu*. Some of the animals have "property-marks" on them. See *American Anthropologist*, 1902, N. S., IV, 159.

Carmi (Maria). Il dramma della Passione ad Oberammergau. (Arch. p. Trad. Pop., Palermo, 1901 [1902], XX, 468-480.) Concluded from last volume. Treats chiefly of stage, costumes, etc., and the changes due to modernizing tendencies. See *American Anthropologist*, 1902, N. S., IV, 159.

Cartailhac (É.) Les cavernes ornées de dessins. La grotte d'Altamira, Espagne. "Mea culpa" d'un sceptique. (L'Anthropologie, Paris, 1902, XIII, 348-354.) In this paper, with 2 figures, M. Cartailhac, after briefly relating his observations in the caverns of Pair-non-Pair and de la Mouthe, withdraws a previously expressed opinion concerning the paintings in the cave of Altamira (described by de Sautuola in 1880), and states his belief that "there is no reason at all to doubt the antiquity of the Altamira paintings."

Castelli (R.) Formole sanatorie e orazioncelle diverse in Mazzara. (Arch. p. Trad. Pop., Palermo, 1901 [1902], XX, 485-488.) Six brief verse charms and incantations (against disease of the breasts, worms, disease of the spleen, sore eyes, stomach trouble, and for getting into communication with a person at a distance) from Mazzara del Vallo in Sicily.

Cermák (K.) Eine merkwürdige Verzierung eines montenegrinischen Handschars. (Mitth. d. anthr. Ges. in Wien, 1902, 19-20.) Brief account, with figure, of the plant and animal ornamentation (Hallstatt and Mycenaean types) on a Montenegrin plowshare.

Coles (F. R.) Scottish charm against witchcraft. (Folk-Lore, Lond., 1902, XIII, 275.) Brief account, with plate, of the *bogle* (scarecrow) charm on a cottage in Nairnshire.

Colson (O.) Jeux d'enfants dans la Belgique. Rimes des doigts. (Arch. p. Trad. Pop., Palermo, 1902, XXI, 104-110.) Interesting collection of fourteen finger-rhymes from Belgium, used by mother, nurse, etc., to child. Of these 4 list the

fingers, 4 "hunt" the little finger, and 6 are of the type of the familiar, "This little pig went to market," with the usual emphasis on the little finger. A complementary note (pp. 108-110) containing comparative data by M. Wilmotte is appended. To the "*wee! wee! wee!*" of our finger-rhyme corresponds the "*wèk, wèk, wèk!*" of one of the Belgian verses and the "*kwik, kwik!*" of another.

Corsì (G. B.) Blason popolare dell'antico stato Senese. (Ibid., 11-24.) Alphabetical list of items of *blason populaire*, or folk wit and humor, sarcasm, and terse description of the places and inhabitants of the region of Siena. The people of Scansano are jeered at as "cat-eaters," and of Massa it is said: "Look, and pass on."

courty (G.) Un foyer préhistorique aux environs de Nemours, Seine-et-Marne. (Bull. et Mém. Soc. d' Anthr. de Paris, 1902, v^e s., III, 244-245.) Brief account of a prehistoric fireplace of the Robenhaus period near Nemours. Many flint implements and rejects were also found here.

Del Giudice (C. M.) Il giovedì santo in Reggio Calabria. (Arch. p. Trad. Pop., Palermo, 1902, XXI, 53-57.) Describes the ceremonies, etc., of Holy Thursday in Calabrian Reggio, religious and folklorical. The adoration of the cross and the representation of the Passion are referred to.

Delisle (F.) Les déformations artificielles du crâne en France, carte de leur distribution. (Bull. et Mém. Soc. d' Anthr. de Paris, 1902, v^e s., III, 111-167.) In this detailed discussion, with several tables and a map of distribution by departments, Dr Delisle concludes: Artificial deformations of the skull were formerly widespread in France. Deformation is not uniform in any given region. The ultimate disappearance of cranial deformations is a consequence of the modifications of customs, head-dresses, the abandonment of fillets, headbands, etc. Cranial deformations (artificial) are neither a sufficient cause for provoking an arrest of physical or intellectual development in the individual, nor of a tendency to the production of cerebral troubles and mental alienation. They are not and cannot be hereditary. This study is based on the examination

of several thousands of normal persons and mentally affected individuals. A subsidiary deformation affects the form of the ear, particularly with women on account of their head-coverings. Among more or less noted people who have had deformed skulls are: Baour-Lormian (member of the Academy), Pinel (the alienist), Sophie Germain (the mathematician), Barruel (the chemist), etc. The School of Medicine at Toulouse in 1873 counted four professors with artificially deformed skulls.

Dieterich (K.) Die Volksdichtung der Balkanländer in ihren gemeinsamen Elementen. Ein Beitrag zur vergleichenden Volkskunde. (Ztschr. d. Ver. f. Volksk., Berlin, 1902, XII, 145-155.) This first section of a comparative study of the folk-poetry of the Balkan peoples (Greek, Servian, Bulgarian, Macedo-Bulgarian, Macedo-Roumanian, Albanian) treats of the material and its grouping. The ballads of these peoples have four legend-cycles. The Dead Brother (related to the Lenore tale found all over Europe), The Building of the Arta Bridge (the chief incident is the walling up of a human being as a luck offering), Digenis Akritas with the Greeks and Marko Kraljevic with the Slavs (half mythic heroes like Hercules or Beowulf), Hero and Leander. The tale of the dead brother and the story of Marko have probably reached the Slavs from the Greeks. The tale of the Arta bridge is perhaps originally Greek.

Dieterich (J. R.) Eselritt und Dachabdecken. (Hessische Bl. f. Volksk., Gießen, 1902, I, 87-112.) Treats of "folk-justice," secret tribunals in general, and in particular of "donkey riding" as a punishment for a wife who had beaten her husband, and "roof-uncovering" as the punishment of the husband who had allowed himself to be beaten by his wife. In Germany the former seems to have been practised only in Hesse, and was widespread in the Middle Ages. The latter continued in Rhenish Hesse till towards the close of the seventeenth century. The woman was led through the town on a donkey; the man was made to tear off the roof to the fourth lath.

Dumont (A.) L'Age au mariage. (Bull. et Mém. Soc. d'Anthr. de Paris, 1902,

v^e s., III, 248-268.) Treats of age at marriage and its influence on natality, the age at marriage in France, proper marriage age, obstacles to marriage and their suppression, etc. M. Dumont fixes the proper age at 21-24 years for males and 19-20 for females. Among the chief obstacles to marriage are the late marriage age among the rich and professional classes, the dowry-system, the parasitism of children and youth, military service, religious celibacy, etc. The author would not permit any one to teach in the public schools who had taken a vow of celibacy. The disastrous heirloom of Greek and Roman corruption, the scholastic tradition, the despoliation of servile labors, the worship of dead languages, the pedantry of humanism, and its neglect of science must be got rid of. Education must become real and scientific. Science must be directive of the nation. The future must see the progress of the people through science, the progress of science through and for the people.

Ebel (K.) Giessener Flurnamen vom Ende des 15. Jahrhunderts. (Hessische Bl. f. Volksk., Gießen, 1902, I, 113-134.) Treats of fifteenth-century names for Giessen fields and meadows.

Eyre (L. M.) Folklore notes from St. Briavel's. (Folk-Lore, Lond., 1902, XIII, 170-177.) Items relating to local omens, death-omens, weather-sayings, medicine and charms, local customs ("Gooding day," Christmas, New Year's, Palm Sunday, etc.), ghosts, witchcraft, fairies, nursery-rhymes. St Briavel's, on the edge of Dean forest, has a local variant of the Godiva story and one also of the "Baby Bunting" rhyme.

Fient (G.) Hemd und Hosa. (Arch. Suisses des Trad. Pop., Zürich, 1902, VI, 81-92.) This "culture-sketch in the Prettigau dialect" is illustrated with 15 figures. Gives detailed account of the manufacture of the shirt and breeches of the peasantry, the implements, etc., employed.

Filippini (E.) Come finiscono le nostre fiabe. (Arch. p. Trad. Pop., Palermo, 1901 [1902], XX, 489-506.) In this interesting article Dr Filippini discusses, with numerous examples, the endings and terminal formulæ in the folk-poetry represented by the Italian *fiaba*. The

occurrence of "I" or "we" in the final lines is characteristic. One quaint ending runs thus: "Broad is the leaf and narrow the way. Now say yours, I've had my say."

Fine (La) del Carnevale in Italia e fuori. (Ibid., 1902, XXI, 72-74.) Brief notes from the *Giornale di Sicilia* on the "passing" of the carnival in various European countries. Even in Italy it has been reduced in length from six weeks to three days. National varieties are also pointed out.

Fuchs (K.) Die Törzburger Hausburgen. (Mitth. d. Anthr. Ges. in Wien, 1902, 20-24.) Describes, with 8 figures, the *Hausberg*, or *koliba*, the characteristic dwelling of the Törzburg region of south-eastern Transylvania. Resemblances to the old Roman house (Rosenau is near the site of a *castrum*), are pointed out.

von Gabnay (F.) Ungarische Puppen. (Globus, Brnschw., 1902, LXXX, 205-208.) Brief account, with 9 figures, of dolls from various parts of Hungary.—Magyar, Wallachian, etc. Among the objects used for dolls are the knee set up on the table, twigs, corn-cobs, pieces of fire-wood, poppy-flowers, ends of brooms. The Magyar dolls are not decked out, as are the Wallachian, with human or horse-hair. In various ways these dolls indicate that "the domestic production of dolls is still where it was centuries ago." The town of Bártsa in the county of Sáros is the Nürnberg of Hungary.

Garofalo (F. P.) Sulla geografia della Penisola Iberica nella età romana. (Bol. Soc. Geogr. des Lisboa, 1902, 67-84.) Catalogues, from the *Itinerarium Antonini*, the roads traversing the Iberian peninsula, beginning with Gaul and the Pyrenees, with explanatory notes.

Gaster (M.) The letter of Toledo. (Folk-Lore, Lond., 1902, XIII, 115-134.) Discusses, with abstract of contents, the so-called "letter of Toledo" sent to Pope Clement III in 1184, from the sages and astrologers of Toledo, prophesying the destruction of the world in 1186 by wind and storm, drought and famine, pestilence and earthquake. The importance of this document and its variants in the folk-thought of Europe are pointed out.

Gfeller (S.) Blütenlese aus einem alten, handschriftlichen Arzneibuche. (Arch. Suisses des Trad. Pop., Zürich, 1902, VI,

51-60.) Items of all sorts relating to folk-medicine, magic, love-charms, etc., from an old manuscript.

Goodyear (W. H.) Architectural refinements in Italian churches. (Amer. J. Archeol., Norwood, Mass., 1902, VI, 166-196.) Gives, with many figures, the results of a series of architectural surveys "of all the well-known cathedrals and churches of Italy (as well as of many of the minor churches and in some rarely visited localities)," covering a period of six months in 1895, and continued in the summer of 1901. The topics discussed here are the horizontal curves in various Italian churches and temples. These "curves" are ascribed to intentional construction. The author considers that "the remarkable discovery had been made, in 1895, that delicate architectural curves were occasionally constructed by the Medieval Italian builders, of a character which suggested a traditional inheritance, possibly through Byzantine sources, from ancient Greek art."

Häberlin-Schaltegger (J.) Aus dem thurgauischen Volksleben. (Arch. Suisses des Trad. Pop., Zürich, 1902, VI, 140-154.) Treats of food and drink, dress, customs, usages, festivals, etc.—St Nicholas, St Silvester's day, New Year's, "Three Kings' day," Sunday in Lent, April Fool, Passion week, Easter, Ascension, consecration, markets, folk-amusements, housebuilding. Also of birth-customs, plays and games, weddings, baptism, funerals, vocation-lore. On pp. 148-154 are given the texts of many children's rhymes, game-songs, sarcastic and teasing verses, place-rhymes, vocation-verses, etc.

Hahn (Ida.) Eierlesete im schweizerischen Rheinthale. (Ztschr. d. Ver. f. Volksk., Berlin, 1902, XII, 210-214.) Describes, with figure, the "egg-collecting," or "egg catching" festival as observed in the Swiss Rhine valley in April, 1901.

Hamilton (J. C.) The Pleiades in legends, Greek drama and orientation. (Proc. Canad. Inst., Toronto, 1902, II, 121-122.) Brief résumé of paper on Pleiades in legend and folklore. In England, Germany, Servia, Spain, etc., this star-cluster "was affectionately regarded." Among the phrases used are "the old seven stars" (England), "the

little nanny goats" (Spain), "the seven sisters of industry" (China).

Hanfbereitung (Die) in der Gegend von Bologna. (Globus, Brnschw., 1902, LXXXI, 286.) Brief note, with illustration, on the ancient hemp-machine (*maciulla antica*) in use near Bologna.

Haupt (H.) Aus Karl Bernbecks Sammlungen zur oberhessischen Volkskunde. (Hessische Bl. f. Volksk., Giessen, 1902, I, 4-18.) After a brief account of Bernbeck (d. 1864) and his folklore collection, the author prints from the manuscript items of folklore and folk-custom from Holzhausen, Gladenbach, etc. On pp. 15-18 magic verses and charms against fire, disease, and pestilence are given.

Haupt (R.) Ein Zauberfigur aus Mecklenberg. (Ztschr. d. Ver. f. Volksk., Berlin, 1902, XII, 106-107.) Describes, with two figures, an "idol" or "magic doll" of fir-bark, probably a crude representation of a female divinity, or the imitation of one.

Hervé (G.) Le renouvellement de la population alsacienne au XVII. siècle. (Rev. de l'Éc. d'Anthr. de Paris, 1902, XII, 283-299.) General discussion of the condition of the population of Alsace during the seventeenth century, wars and mortality, extent of depopulation, measures of repopulation, various classes of immigrants (farmers, workmen, artisans, traders, officials, monks and nuns, etc., nobles and patricians), origin and importance of the chief migratory currents, contemporary immigrations. By 1697 Alsace had been reduced to two-thirds of its first importance, and had been filled up again by all sorts of immigrants, but chiefly from Germany (Swabians largely) and Switzerland. For three centuries at least Alsace has been in process of ethnic transformation.

Hobus (F.) Die Dechsele Cult-Figur. (Verh. d. Berliner Ges. f. Anthr., 1902, 50-56.) Discusses, with 3 figures, the peculiar earthen figure found at Dechsel in September, 1901. The author seeks to bring it in relation with the so-called "Astarte-Idols."

Hoernes (M.) Basil Modestows "Einleitung in die römische Geschichte." (Globus, Brnschw., 1902, LXXXII, 5-10.) Résumés the interesting and important work of Professor Modestov,

Wedenije v Rimskuju Istoriju (St Petersburg, 1902), treating of the prehistoric ethnology and pre-Roman culture influences in Italy, the beginnings of Rome, etc. Modestov shares the now common opinion that the earliest Italian civilization proceeded from north to south, and not *vice versa*. He identifies the Ligurians and the Iberians as one race of North African origin. The first incursion of Aryans took place from beyond the Alps some 2000 years B. C. The proto-Latins, who came from the Danube valley and brought an Aryan tongue and the custom of incineration with them, are represented by the people of the *terramari*. The Etruscans he brings oversea. The *terramaricoli* at a later stage appear as the Umbrians, the people of the Villanova culture.

Höfler (M.) St Martini-Gebäck. (Arch. Suisses des Trad. Pop., Zürich, 1902, VI, 22-29.) Describes, with five figures, the folk and "cult" pastry of St Martin's day and the season about that festival in various parts of Germany and Switzerland. Some of the lore and legend of New Year's has been transferred to St Martin's day. Feasts, revels, dinners, bread, cakes, etc., are treated.

— St Nikolaus-Gebäck in Deutschland. (Ztschr. d. Ver. f. Volksk., Berlin, 1902, XII, 80-89, 198-203.) Interesting account, with a plate (five figs.) of St Nicholas pastry in Germany and the customs connected therewith. The names of St Nicholas Day (Dec. 5) and St Nicholas eve and the folklore of the occasion are discussed. The varieties of "St Nicholas" bread are considerable. Among the forms noted and described are: Human figures of both sexes (the local names are explained)—saints and mythological characters, house-spirits, knights, etc.; animal figures of all sorts (pig, lamb, horse, stag, fish); birds (hen, cock, swan, dove, duck, eagle, etc.). Substitutes for earlier offerings or sacrifices Dr Höfler considers the "hair-cakes," "snail cakes," "maiden's wreaths," and "boats."

Hunsinger (F.) und **Strack** (A.) Die letzten Schlottenhäger in Hungen, 1852. (Hessische Bl. f. Volksk., Giessen, 1902, I, 137-143.) Brief account of the last performance of an interesting folk-ceremony of Easter time, in which a race once figured prominently. Dr Strack

adds some notes on racing, the choosing of the "May-king," "May-count," "Easter-king," etc. The last in the race is called *Stinker* (a number of synonyms are given). The ceremony of the *Pfingstquack*, a sort of fool-king rite, is also briefly described. The *Schlotten-Adger* ceremony (originally striking with the stalk of a plant) belongs with the long series of rites and ceremonies connected with the use of the "rod of life."

Impronte maravigliose in Italia. (Arch. p. Trad. Pop., Palermo, 1901 [1902], xx, 553-555.) Nos. cxxix-cxxxi, continued from previous number. Treats of footprint of Virgin at Gioiosa Guardia, impression of head of St Venera at Acireale, body of St Benedict at Roiate.

Ive (A.) Canti popolari in Veglioto odierno. (Ibid., 1902, xxi, 110-128.) Texts of songs of love, serenades, etc., from the island of Veglia.

Jenny (G.) Aderlass-Regeln. (Arch. Suisses des Trad. Pop., Zürich, 1902, vi, 49-51.) Rules for blood-letting, according to the months of the year and certain auspicious and inauspicious days, from a manuscript of the seventeenth century.

Jentsch (H.) Ueber eine steinerne Bronze-Gussform von Horno, Kreis Guben. (Verh. d. Berl. Ges. f. Anthr., 1902, 259-261.) Brief account, with figure, of a stone mold for bronze-casting, belonging probably to a traveling bronze-caster and not to a native.

K. (R. F.) Zur Volkskunde Bayerns im 17. Jahrhundert. (Globus, Brnschw., 1902, LXXXI, 236-238.) Enumerates from Lingg's *Kulturgeschichte der Erzdiözese Bamberg* (Kempten, 1900) items of seventeenth century Bavarian folklore. Among the topics treated are "hail-festival," meadow-riding, witchcraft and incantations, superstitious use of baptismal water, baptism and wedding feasts ("school-weddings" were also known), funeral orations, saintly legends, etc.

Kopp (A.) Alter Kernsprüchlein und Volksreime für liebende Herzen ein Dutzend. (Ztschr. d. Ver. f. Volksk., Berlin, 1902, xii, 38-56.) Gives German texts, variants, etc., of twelve pithy sayings and brief folk-rhymes dealing with love and lovers, with explanatory and comparative notes.

Krause (E.) Excursion der Gesellschaft nach Prenzlau und Umgegend am 21. und 22. Juni. (Verh. d. Berl. Ges. f. Anthr., 1902, 270-279.) Brief account of the wall at Warnitz, the stone-age graves at Dedelow, the neolithic find at Schwedt, the La Tène burial-place of Storkow, the pottery-making place at Steglitz, and other minor finds and discoveries represented in the Uckermark Museum.

Lang (A.) The sources of some ballads in the "Border Minstrelsy." (Folk-Lore, Lond., 1902, xiii, 191-197.) Treats of "The Outlaw Murray," "Auld Maitland," "Otterbourne," etc. Scott's editing and Hogg's connection with the form of these ballads are discussed. In 1801 in the first ballad the *Southron* (i. e., Englishman) was already confused with the *Soudan* (Turk). Lang thinks that Hogg was not the forger of "Auld Maitland."

Lejeune (C.) A propos de la natalité en France. (Bull. et Mém. Soc. d'Anthr. de Paris, 1902, v^e s., iii, 312-315.) The author protests against the idea that large families are inferior to others.

Lissauer (A.) Beiträge zur Kenntniss des paläolithischen Menschen in Deutschland und Süd-Frankreich. (Verh. d. Berl. Ges. f. Anthr., 1902, 279-293.) Treats, with 11 figures, of further evidence of the contemporaneity of man and the extinct elephants and rhinoceroses of Taubach and of Chantre's evidences of the existence of Quaternary man in the valley of the Rhone. The recently discovered skeletons of Mentone are also noticed.

Macquart (E.) Mortalité, natalité et dépopulation. (Bull. et Mém. Soc. d'Anthr. de Paris, 1902, v^e s., iii, 385-392.) The conclusion of this statistical study is that, if France has the lowest natality of any European country, the other countries are on the road to the same goal. There is, however, a possibility of greatly reducing infant mortality.

Mahoudeau (P. G.) Note sur les anciens habitants de la Corse. (Rev. de l'Éc. d'Anthr. de Paris, 1902, xii, 319-333.) Résumés data from bishop Giustiniani (1470-1531), della Grossa (chronicler of first half of fifteenth century), Pausanias, Herodotus, Diodorus Siculus, Seneca, and Strabo, concerning the character of the

ancient Corsicans. Dr Mahoudeau considers that the ancestors of the mountaineers of Niolo belonged to the same stock as the ancient peoples of western Europe, the race of the Dordogne, the Vézère valley, etc. Through long centuries of revolts against every invader of their soil, the Corsicans have preserved the type of their prehistoric ancestors.

Manning (P.) Stray notes on Oxfordshire folklore. (Folk-Lore, Lond., 1902, xiii, 288-295.) Treats of witchcraft and prehistoric monuments (Rollright Stones, Devil's Quoits, Hoar Stone).

Marchand (F.) Ueber das Hirngewicht des Menschen. (Biol. Cbl., Leipzig, 1902, xxii, 377-382.) Brief résumé of the study of 1173 (male 716, female, 457, —adults 707) brains of individuals belonging to the general population of Hesse, made in the pathological laboratory of Marburg, with references to other researches. The real average weight (senile diminution excluded) of the brain, according to Marchand, is 1400 gr. for males and 1275 gr. for females between the ages of 15 and 50 years. Only small growth occurs after the fifteenth year. The relation of brain-weight to stature and to race is not very clear. The smaller brain-weight of woman does not depend alone on her smaller stature. A variation of 300-500 gr. may be considered normal. The detailed account of Marchand's investigations appears in the *Abh. d. K. S. Ges. d. Wiss., math.-phys. Kl.*, 1902, xxvii.

di Martino (M.) Tesori nascosti da ritrovare. (Arch. p. Trad. Pop., Palermo, 1901 [1902], xx, 540-550.) Concluded from previous issue. See *American Anthropologist*, 1902, N. S., IV, 327. This section concerns buried treasures in Spaccaforno, Noto, Floridia, Monterosso, Vizzini, Butera, Terranova, Licodia, Ragusa, Mineo, Chiaramonte, etc.

Massara (A.) Venerdi santo a Romagnano Sesia. (Ibid., 1902, xxi, 78-85.) Treats of the gambling of the soldiers for the garments of Jesus and its rôle in the ceremonials of Ash Wednesday in Romagnano, and the festival of "the governor" in connection therewith, a sort of *festum stultorum*.

Mehlis (C.) Das neolithische Grabfeld von Alzey. (Globus, Brnschw., 1902, lxxxii, 245-246.) Brief account, with

figure, of the neolithic burial-place of Alzey (Old Gallic Altiatia) in Rhenish Hesse. The excavations were carried on chiefly in 1902; thirteen graves were found, the skeletons in which were stretched out and had not the knee-elbow position. Contents of the graves, ornaments, etc., are noted. See *American Anthropologist*, 1902, N. S., IV, 774.

Meier (S.) Volkstümliches aus dem Frei- und Kelleramt. (Arch. Suisses des Trad. Pop., Zürich, 1902, vi, 110-135.) Continued from previous volume. Treats of the "getting acquainted" of young people as a marriage-preliminary—*Bekanntschaft, Kiltgang*, etc.—wooing, betrothal, wedding and wedding customs.

Michel (G.) Der Geldtopf. (Verh. d. Berliner Ges. f. Anthr., 1902, 94-98.) Describes, with two figures, the so-called "money-pot" (used for storing cash) of the Trèves country, now almost disappeared, but formerly much in use in this region once so wasted by war and its concomitants.

Mielke (R.) Volksaltertümer aus dem Schwarzwalde. (Ztschr. d. Ver. f. Volksk., Berlin, 1902, xii, 108-109.) Brief account, with two figures, of an old loom and a painted dish from the Black Forest.

Moore (Isabel.) Portuguese folk-songs. (J. Amer. Folk-Lore, Boston, 1902, xv, 165-169.) General account, with texts and music of various forms of the *fado*.

de Mortillet (A.) L'or en France aux temps préhistoriques et protohistoriques. (Rev. de l'Éc. d'Anthr. de Paris, 1902, xii, 47-72.) Résumés, with fourteen figures, facts concerning the occurrence of gold objects in France in prehistoric and protohistoric times. Brittany seems to count a few gold objects (necklaces, etc.) of the stone age, and the Pyrenean dolmens have furnished some gold beads. But it is at the beginning of the bronze age that gold appears in any quantity and is at all widely distributed. Its greatest use, however, begins with the Hallstatt epoch (first iron age). The concentration of gold objects in Brittany in protohistoric times is a curious fact—they were probably the result of commercial adventure or warlike expeditions. The application of gold leaf to metals or other substances dates from the bronze age.

- Nieri (I.)** Regali degli sposi alle spose nel Lucchese. (Arch. p. Trad. Pop., Palermo, 1902, XXI, 58-60.) Brief account of the lovers' treat for their fair ones on St Lawrence's day in the region of Lucca.
- La scornocchiatura, il dipano, lo spiccio e la pesta nel Lucchese. (Ibid., 1901 [1902], XX, 551-552.) Brief notes on corn-husking, flax-winding, leaf-stripping (chestnut-shelling, etc.).
- Olshausen (O.)** Ueber die Zeitstellung der Schwanen hals-Nadeln und der Gesicht-Urnen. (Verh. d. Berl. Ges. f. Anthr., 1902, 198-208.) In this article, with five figures, the author concludes that the "swan needles" begin in the earlier Hallstatt period and last till the early La Tène period; the face-urns, which also last till the latter period, appear first probably at the same time.
- Ordish (T. F.)** The mumming-play and other vestiges of folk-drama in the British Isles. (Folk-Lore, Lond., 1902, XIII, 296-297.) Brief appeal for material for a collected work on this topic.
- Pellandini (V.)** Alcuni esempi di medicina popolare Ticinese. (Arch. Suisses des Trad. Pop., Zürich, 1902, VI, 43.) Brief citations of folk-remedies for sixteen diseases, etc.
- Credenze popolari nel Cantone Ticino. (Ibid., 44.) Gives seven signs of good luck and eleven signs of bad luck from the canton of Ticino.
- Scrivete il nome sui vostri libri. (Ibid., 211.) Examples of verses written with their names by students in books.
- Perroni (G.)** Mamucca. (Arch. p. Trad. Pop., Palermo, 1901 [1902], XX, 535-539.) Brief account of *Mamucca*, a "human devil" of the folklore of Castoreale. The chief business of this rascal is to hide objects of common use from their owners, etc. He is a typical maleficent genius. The origin of the name is not known.
- Pietkiewicz (M.)** Sur une mandibule préhistorique. (Bull. et Mém. Soc. d'Anthr. d. Paris, 1902, 5^e s., III, 323-325.) Brief description of a lower jaw-bone discovered in May, 1901, in a Gaulish burial-place at Châlons-sur-Marne. The jaw and teeth on both sides are very regular.
- Pitré (G.)** Il Paternostro di S. Giuliano. (Arch. p. Trad. Pop., Palermo, 1902, XXI, 3-10.) The Paternoster of St Julian, favorite of travelers, is one of the most noted prayers of the Middle Ages, and at the same time a piece of old folk-poetry. It is referred to by Sacchetti and Boccaccio. The proverb "to have said the paternoster of St Julian" signifies to have found good lodging. Dr Pitré cites and discusses briefly four versions from various parts of Sicily.
- Modi proverbiali e motti storici di Palermo, raccolti ed illustrati. (Ibid., 1901 [1902], XX, 433-445.) Nos. 49-74 of proverbial phrases and historical sayings connected with Palermo and the Palermitans.
- Pittard (E.)** Anthropologie de la Roumanie. Contribution à l'étude des Tsiganes dits roumains. (L'Anthropologie, Paris, 1902, XII, 321-328.) Gives, with tables of anthropometric data, the results of the measurement of 47 (5 women, 42 men) so-called "Roumanian Gypsies,"—a more detailed account is to appear in the *Bulletin de la Société des Sciences de Bucarest*. These "Gypsies" are of average (or less) stature, averaging 1612 mm. for men; their varied head-form suggests mixture; the nose is mesorrhynian and the ear small.
- Contribution à l'étude anthropologique des Tsiganes turkomans. (Ibid., 447-485.) Gives, with tables of anthropometric data, the results of the measurements of 62 "Turkoman Gypsies" from the Dobrudja, together with comparisons of these and the "Roumanian Gypsies," previously studied. The former are taller (average 1.63 m.) than the latter, have a little lower cephalic index (average 78.44), and a larger ear. A more detailed account of these studies is also to appear in the *Bulletin de la Société des Sciences de Bucarest*.
- Pometta (Maria).** Toten-Brauch und -Glaube im Maggiathal. (Arch. Suisses des Trad. Pop., Zürich, 1902, VI, 48-49.) Brief account of the "salt-legacy" from the dead to the living, the willing of property to the dead, the location of the souls of the dead in the chimney, etc. — Baptized children who die under seven years of age are not "poor souls," but "angels."

- R. (E.)** Vornamen in deutschen Städten. (Globus, Brnschw., 1902, LXXXII, 131.) Résumés data in Pulvermacher's *Berliner Vornamen* (Berlin, 1902) and Wilhelm's *Tauf- und Rufnamen im Herzogtum Koburg* (Koburg, 1902), the first dealing with the names of 41,075, the latter with those of 11,700 school children. In Berlin, Wilhelm and Margarete lead; in Coburg, Karl and Anna.
- Raccuglia (S.)** Blason popolare Acitano. (Arch. p. Trad. Pop., Palermo, 1902, XXI, 25-40.) After a general introduction the author treats of twelve proverbs and folk-sayings belonging to the *blason populaire* of Aci. The oldest of these goes back to the time of the Sicilian Vespers. In one the people of Aci have devoted a pornographic line to themselves.
- Reichhardt (R.)** Sagen aus Nordthüringen. (Ztschr. d. Ver. f. Volksk., Berlin, 1902, XII, 66-72.) Nos. 20-50 of brief North-Thuringian tales, of which 20-23 relate to "Steppchen," or "Little Steve," a demon of varied accomplishments; 25-34 to water and the miller; 35-50 to all sorts of spirits and "spooks."
- Reinecke (P.)** Abbildungen frühbronzezeitlicher Fundstücke aus Rheinhessen im Besitz des Mainzer Alterthums-Vereins. (Verh. d. Berl. Ges. f. Anthr., 1902, 121-125.) Discusses, with eight figures, bronze needles, rings, spirals, plates, etc., from various parts of Rhenish Hesse. In a grave near Nierstein were found some ivory rings, and at Oberholm 46 shells of the *Columbella rustica*, a Mediterranean species. One of the needles is a variant of the "sword-needle," common in Bohemia, Saxony, etc.
- Zu niederbayerischen Funden. (Ibid., 217-219.) Brief accounts of an ivory leg ornament from the burial-place of Straubing (early bronze age), and of a Teutonic urn burial-place on the left bank of the Danube, near Straubing (late imperial period). The use of ivory for ornament, etc., seems now proved for the pre-Mycenaean period, not only for southern, but likewise for central Europe, perhaps also for the early bronze or late neolithic.
- Beiträge zur Kenntnis der frühen Bronzezeit Mitteleuropas. (Mitth. d. Anthr. Ges. in Wien, 1902, XXXII, 104-129.) Discusses, with twenty-one figures, recently-discovered data as to the early bronze age in central Europe. The north Bohemian graves of the Aunétitz type represent a center, or point of exodus of early bronze culture. The axe-hammers of Bresnow, Kamýk, etc., the flat celts of Strättlingen, the bronze needles of the central Rhine, Bohemia, Moravia, etc., neck and other ornaments, plates, beads, etc., animal figures (at Bythin in Posen), objects of silver, pottery remains, etc., are briefly considered. The author thinks that between the "island culture" of the Mediterranean and the culture of the early bronze age in central and western Europe intimate relations have existed.
- Rhamm (K.)** Der Verkehr der Geschlechter unter den Slaven in seinen gegensätzlichen Erscheinungen. (Globus, Brnschw., 1902, LXXXII, 103-108, 186-193.) The first part of this article devoted to the contrast-phenomena of sexual intercourse among the Slavs, treats of the Slavonians as a corrupted people (lewdness, alcohol, finery, cruelty and selfishness, dislike for farm-labor—physical and mental evils leading to degeneration). The second deals, in considerable detail, with sexual taboos among the South Slavonians, together with the neighboring Albanians and Roumanians. The paradox of lewdness and taboo must in part, the author thinks, be due to survival of prehistoric conditions. The account of the conduct of young married couples toward each other is very interesting.
- Roediger (Else.)** Segen aus Rollsdorf bei Hohnstedt, Mansfelder Seekreis. (Ztschr. d. Ver. f. Volksk. Berlin, 1902, XII, 105-106.) Text of nine charms against various diseases.
- Rossat (A.)** Chants patois jurassiens. (Arch. Suisses des Trad. Pop., Zürich, 1902, VI, 161-183.) This fourth section, Nos. 122-136, of a collection of folk-songs in the Jura *patois* treats of satirical songs. Phonetic text and literary French rendering, with explanatory notes, are given.
- Rzehak (A.)** Moderne Pithoi. (Globus, Brnschw., 1902, LXXXI, 175-177.) Brief account, with three figures, of the Spanish *tinajas*—gigantic earthen vessels, corresponding to the Homeric *pithoi*. The chief place of manufacture is Colmenar de Oreja, province of Madrid.

- Schmidt (A.)** Das Gräberfeld von Warmhof bei Mewe, Reg-Bez. Marienwerder, W.-Pr. (Ztschr. f. Ethnol., Berlin, 1902, XXXIV, 97-153.) Catalogue description of the discoveries of Fibelkorn (1879-1894), Mathes (1893-1898) Schmidt (1894-1898), Kumm (1896), etc., at the prehistoric burial-place of Warmhof, West Prussia. In all 96 graves with skeletons, 32 urn-graves and 49 fire-pit graves were found, which contained a total of 969 objects (of bronze, silver, iron, gold, amber, pearl, glass) — among these were 238 fibulae, 149 amber beads, 275 glass beads. These remains show that Warmhof represents for the most part the Roman iron age.
- Schmidt (E.)** Der diluviale Schädel von Egisheim. (Globus, Brnswgw., 1902, LXXXI, 306-307.) After resuming Schwalbe's recent study of the famous Egisheim skull, the author concludes that it belongs to the recent human races, and differs markedly in form from the Neanderthal cranium.
- Schmidt (H.)** Die Keramik der macedonischen Tumuli. (Verh. d. Berliner Ges. f. Anthr., 1902, 76-77.) Brief notes on the monochrome and painted pottery from the Macedonian tumuli. The latter was imported during the fourth to the third century B. C. The monochrome pottery is the product of the ancient Thracians.
- Schönbach (A. E.)** Zeugnisse zur deutschen Volkskunde des Mittelalters. (Ztschr. d. Ver. f. Volksk., Berlin, 1902, XII, 1-14.) Extracts from the tractate *De decem praeceptis* of Thomas Ebendorfer von Haselbach (1387-1464 A. D.), dated 1439, containing many interesting data of folk-belief in Latin text.
- von Schroeder (L.)** Lihgo. Refrain der lettischen Sonnwendlieder. (Mitth. d. anthr. Ges. in Wien, 1902, XXXII, 1-11.) The author seeks to connect the *lihgo* (*lgo*) of the Lithuanian solstitial song-refrains with the verb *lgti*, "to swing," on the basis of Rig-Veda 7, 87, 5, and other passages in old Hindu religious and mythological documents, where the sun is referred to as a swing, and of the numerous Indogermanic beliefs about the "dancing," "leaping," "playing," etc., of the sun at easter — *Aurora* (*Ushas*) is the dancer of the springtime.
- Schulte (O.)** Kirchweih im Vogelsberge. (Hessische Bl. f. Volksk., Giessen, 1902, I, 65-86.) Treats of the *Kirmes* (the festival of the whole village) in the Vogelsberg region. The rôle of the young people; the choosing, allotment, auctioning, etc., of maidens (derived from the old *Mailehen*); dancing and drinking; the church-ceremonies; processions, music, songs, etc., are described. The music and words of a few songs are appended.
- Schwalbe (G.)** Neanderthalschädel und Friesenschädel. (Globus, Brnswgw., 1902, LXXXI, 165-174.) In this article, with four figures, the author compares the Neanderthal skull with the *Batavus genuinus* skull of the Göttingen museum. The conclusion reached is that in form the Neanderthal and related skulls belong to none of the known human races (ancient or modern), that these human races are all nearer to each other than is the lowest of them to the Neanderthal group, which forms a specifically different race of the *Genus Homo*. The *Batavus genuinus* is not Neanderthaloid.
- Sébillot (P.)** Le culte des pierres en France. (Rev. de l'Éc. d'Anthr. de Paris, 1902, XII, 175-186, 205-216.) This article appeared in English in the *American Anthropologist*, 1902, N. S., IV, 76-107.
- v. Seidlitz (N.)** Notfeuer gegen Rinderpest im Kaukasus. (Globus, Brnswgw., 1902, LXXXI, 285.) Brief note on the use of "need-fire," kindled by rubbing two pieces of wood together, as a remedy against cattle-plague, by the Temirgoi, a Circassian people of the Kuban region, and the ceremonies in connection therewith.
- Singer (S.)** Zur Volkskunde vergangener Zeiten. (Arch. Suisses des Trad. Pop., Zürich, 1902, VI, 184-199.) Treats of the *Käsmahl* (with text of a poem of 1741 on this subject); text of a folktale on the ascent of the Niesen, 1820; a boys' and girls' play of the beginning of the fifteenth century; the tale of "the new Eve" (based on Hagedorn).
- Sprenger (A.)** Einige Sagen aus dem St. Galler Oberlande. (Ibid., 136-140.) Brief tales of an enchanted maiden, a "wild woman," an angry dwarf, a dumb dwarf woman, and the "Alp mother."

- Steig (R.)** Jacob Grimms Plan zu einem Altdeutschen Sammler. (Ztschr. d. Ver. f. Volksk., Berlin, 1902, xii, 129-138.) Discusses Grimm's plan outlined in 1811 for an "Old German Collection," a journal for publishing folk-material. The sketch of Grimm is reprinted verbatim on pp. 143-136.
- Strack (A.)** Die verborgenjüdische Sekte der Dönmé in Salonik. (Globus, Brnschw., 1902, LXXXI, 219-224.) Historical and descriptive account, with bibliographical references, of the Dönmé, a secret Jewish sect of Salonika, Turkey. Of their cult and ritual little is known, though their Talmudic practices are of the Sephardim rite. The members of the Dönmé have a private and a public name. They are said to be the descendants of Jews driven from Spain in 1492 by Ferdinand and Isabella and welcomed by Sultan Bajazid II.
- Hessische Vierzeiler. (Hessische Bl. f. Volksk., Giessen, 1902, I, 30-60.) Treats of the little four-line folk-poems used in "Schnaderhüpfel" and other dances. The texts of eighty-six such "four-liners" (in the collection of the Hessian Folklore Society) are given, with explanatory remarks and notes. All sides and idiosyncrasies of folk-life appear in these verses: inability to dance, beggars, love and its symbolism, marriage, eating, etc. Many of them are sarcastic and teasing verses, in which tailors, young people of both sexes, local events, etc., are ridiculed. The places where these songs are still chiefly sung are the spinning-room and at dances. The author considers (contrary to Meier) that these "four-liners" grew out of the life and emotions of the *folk* — represent *mass-poetry* and not individual poetry.
- Tamarelli (A.)** Gortyna. (Amer. J. Archeol., Norwood, Mass., 1902, vi, 101-165.) Treats, with thirty-two figures, of the topography of the old Cretan city of Gortyna, the acropolis and large theater, the theater near the Pythion, the aqueduct, the fortification of the acropolis, the sepulchral cell on the acropolis, and the Roman tomb on the plain. Gortyna must have been much more populous at the Roman epoch than earlier. The acropolis edifice is Roman, and was in use until a late period. The Gortynian aqueduct of Roman origin had a great siphon.
- Tetzner (F.)** Die Drawehner im hannöverschen Wendlande um das Jahr 1700. (Ibid., 253-256.) Brief account, with map, of the Slav-speaking Polabians of the Drawehn region in Wendish Hanover in the later seventeenth and early eighteenth centuries. The linguistic data are referred to in particular. The language had largely died out by 1700 and survived only sporadically here and there, disappearing before the intrusion of German. Of four versions of the Lord's Prayer said to be Polabian, each is different from the others and all are more or less mixed with German.
- Tierzeichnungen (Die)** in der Höhle von Combarelles. (Globus, Brnschw., 1902, LXXXI, 175.) Brief account, with two figures, after Capitan and Breuil.
- Traeger (P.)** I. Neue Funde aus Albanien. II. Die macedonischen Tumuli und ihre Keramik. (Verh. d. Berliner Ges. f. Anthr., 1902, 56-76.) In the first of these articles, with seventeen figures, the author treats of weaver's weights, fibulae, ear-rings, bracelets, beads, pottery, etc., from Gaidiki, Kruja, etc. The second, with twenty-eight figures, discusses the tumuli of various sections of Macedonia and the collection of pottery-fragments gathered from ten of them. The flat tumuli are not funeral places or funeral monuments, but primitive, prehistoric dwelling-places.
- Truhelka (Č.)** Der vorgeschichtliche Pfahlbau von Dolnja Dolina, im Bette des Saveflusses. (Globus, Brnschw., 1902, LXXXII, 377-382.) Interesting account, with eleven figures, of the pile-dwellings in the bed of Save river near Dolnja Dolina, where excavations have been carried on for the last two years. The remains are now in the Sarajevo Museum. House-architecture, evidences of fishing and hunting, pottery, weaving-apparatus, the settlement burial-place, burial ornaments, etc., are briefly described. This find is of great importance as revealing not alone the house-architecture but also many particulars in the common and daily life of the "lake-dwellers." According to the author the presence of "stoves" in these pile-dwellings disposes of the idea that such were of Roman origin. The ornament type shows analogies with of the Terramara of northern Italy. No Roman remains were found, and the Save pile-

dwellers were prospering in the early iron-age.

Usener (H.) Besprechung. (Hessische Bl. f. Volksk., Giessen, 1902, 1, 2-4.) Traces the magic verse or charm for curing dislocation of the leg from the old High German version in which the old Teutonic deities figure down to a version of 1628 in which only "unsz liebe frau" appears.

Valla (F.) Proverbi e detti proverbiali tratti dal codice MS. 2085 della Biblioteca Angelica di Roma. (Arch. p. Trad. Pop., Palermo, 1902, XXI, 75-77.) Latin text and Italian equivalents of 25 proverbs and sayings from manuscript of 1720 A. D. Among them is the well-known "Red sky, wind or rain."

Verneau (R.) Les fouilles du Prince de Monaco aux Baousses-Rousse. Un nouveau type humain. (L'Anthropologie, Paris, 1902, XIII, 561-585.) In this article, with 5 illustrations and tables of measurements, Dr Verneau gives the details of his study of the "new race" represented by the human remains of the famous caves of Baousses-Rousse. A brief account by Dr Verneau was noticed in the *American Anthropologist*, 1902, N. S., IV, 545. These negroids may possibly be the ancestors of the race of Cro-Magnon.

Voigt (E.) Die germanische Besiedlung des nördlichen Schwedens. (Globus, Brnschw., 1901, LXXXI, 218-219.) Brief résumé of a recent lecture by Professor O. Montelius on the settlement and colonization of northern Sweden. The settlement of the coast part of northern Sweden was due to an intentional forward movement of the Teutonic peoples, although the real colonization of *Norrland* was a matter of the last century.

Volmar (J.) Us et coutumes d'Estavayer. (Arch. Suisses des Trad. Pop., Zürich, 1902, VI, 1-22, 92-110.) Treats of folk usages and customs at Estavayer-le-Lac on Lake Neuchâtel. The Easter festival (resurrection song, Easter Monday, Palm Sunday, etc.), the Fête-Dieu, the Rosary, St Catharine's eve (25 November), St Nicholas' day (5 December), St Sebastian's day (19-20 January), the first Sunday in Lent, May festivals, Benediction fête, etc., and the

songs, dances and other ceremonies connected with them are briefly described.

Vukasovic (V. V.) Due leggende popolari di S. Simeone, protettore di Zara. (Arch. p. Trad. Pop., Palermo, 1902, XXI, 48-51.) Two brief legends concerning the advent of the thaumaturgic saint of Zara from Jerusalem and the miracle wrought for Queen Elizabeth of Hungary, which gave him the popular name considered here. Brief notes on his feast and the use of his name in exorcism are given.

— Gli ornamenti popolari degli Slavi meridionali. (Ibid., 1901 [1902], XX, 457-467.) After a brief account of Dr F. Krauss' exposure of Lay, discusses (on the basis of his own collection from Slavs who have not felt the influence of the school) the folk-ornamentation of the Slavonic population of Dalmatia, Bosnia, and particularly of Herzegovina. The chief foundation of these ornaments is the "meander." Clothing is discussed in particular.

Wallace (W.) Il capodanno in Inghilterra e in Iscozia. (Arch. p. Trad. Pop., Palermo, 1901 [1902], XX, 481-484.) These notes on New Year's ceremonies in England and Scotland treat chiefly of "first foot."

Winter (C. A.) Töten und Aussetzen Neugeborener bei den Esthen in vorgeschichtlicher Zeit. (Globus, Brnschw., 1902, LXXXI, 199-205.) Brief discussion of infanticide and exposure of new-born infants among the Estonians in prehistoric times, based on two versions ("The Hall of Joy," and "The Exposed") of an old folk-song. The original Estonian text of the first version is given, and numerous explanatory notes are appended to the German renderings of both. In the song a daughter-in-law of foreign (Teutonic?) birth protests against the killing of the child, which was in accordance with the custom of the time.

Wymann (E.) Die ersten schweizerischen Verehrer des Grabtuches Christi in Turin. (Arch. Suisses des Trad. Pop., Zürich, 1902, VI, 199-211.) Gives, from contemporary documents, an account of the visit of the Swiss envoys to Turin in 1578, and their adoration of the holy sudarium.

Zindel-Kressig (A.) Volkstümliches aus Sargans. (Ibid., 30-42.) Treats of folk-belief about demonic beings, folk-foods, drinks, meals and meal-times, dress, customs and usages (baptism, education, confirmation, communion, death-watch, burial, etc.)

AFRICA

Ankermann (B.) Einige Fetische aus Togo. (Verh. d. Berl. Ges. f. Anthr., 1902, 208-214.) After a brief description, with a figure of a clay fetish (temporary abode of the soul) from the Kratchi region of Togo, the author details the beliefs of the natives about the soul, its nature and functions, life after death, etc. Some general comments on fetishism are added.

Balfour (H.) The *goura*, a stringed-wind musical instrument of the Bushmen and Hottentots. (J. Anthr. Inst., Lond., 1902, xxxii, 156-176.) After giving the native names and recording the descriptions of various observers from Peter Kolbe in 1704 to Widdicombe in 1891, the author discusses relations of the *goura* to the musical bow, the Jew's harp, the kite bows, and the "bull-roarer." The conclusion reached is that "the *goura* should be placed in a separate category, associated, possibly, by right of kinship, with the Asiatic wind-blown bows, through which a relationship with the ordinary 'musical bows' may be traced." The possible relationship to the "bull-roarers" merits attention, though, on present evidence, very problematical. The article is accompanied by three plates illustrating the *goura* and its use.

Barthélemy (R.) et Capitan (L.) Le préhistorique aux environs d'Igli, extrême-sud algérien. (Rev. de l'Éc. d'Anthr. de Paris, 1902, xii, 300-315.) Brief account, with sketch-map and 23 figures of prehistoric remains south and north of Igli in extreme southern Algeria, investigated by Lieut. Barthélemy in 1900. Ruins (pre-Arab Berber remains at Beni-Gumi), flint implements (valleys of the Wed Zulfana and Wed Saura), petroglyphs (elephant-hunt at Awedj, inscriptions in alphabetic and other characters at Awedj, Beni-Gumi, Taghit, etc.), and a manuscript of the Caïd of Taghit relating to medicine are

discussed. Clearly retouched flints are rare in these south Algerian "stations." The petroglyphs of Awedj seem to be prehistoric; the rest Libyan-Berber. On page 312 are given some drawings of camels by illiterate individuals of this region, obtained by Lieut. Barthélemy for comparison—these differ from the figures in the petroglyphs.

Capitan (L.) Hadjrat-Mektoubat on les pierres écrites. Premières manifestations artistiques dans le nord africain. (Ibid., 168-174.) Résumés, with 7 figures, the recent study of M. Flamand, published in the *Bulletins de la Société d'Anthropologie de Lyon* for 1902 on the "inscribed stones" of southern Algeria, petroglyphs of an interesting character and content. These rock-drawings include prehistoric (neolithic) figures of animals, men, etc., Libyan-Berber drawings and inscriptions (inferior in art), Mussulman inscriptions (writings only), and soldiers' graffiti.

Cardoso (H. L.) Pequeno vocabulario do dialecto Pepel. (Bol. Soc. Geogr. de Lisboa, 1902, 120-128.) The Pepel language of Bissau, in Portuguese West Africa, forms, with the Buramo and Manjaco, a linguistic stock. Brief outlines of phonology and grammar are given. Also a vocabulary of some four hundred words including numerals 1-12.

Conrad (L.) Die Ngumba in Süd-Kamerun. (Globus, Brnschw., 1902, lxxxii, 333-337, 350-354.) The author, long resident in the Ngumba country, discusses tribal divisions, trade-settlements, chiefs, forms of greeting (very cordial), slavery (chief "mild" and familial), law, "magic," witchcraft, shamanism, war, education and treatment of children, marriage (the bride-price may reach Mk. 387.50), divorce, birth, twins, name-giving (a brief list of common names for boys and girls is given on page 359), disease and sickness (a "head-worm" is believed in) and prophylactics, death and burial, mourning (the wives go stark naked for two months, besides painting the body with white earth), purification ceremonial (after death), deities and legends (two chief gods, one in the sky and one in the Ngumba country), — the legend of origin is given on page 352, fetish-priests, "thunder-stones," food-taboos, the land

of souls, war-magic, time-reckoning (nothing special), celestial and atmospheric phenomena (the earth is an infinite plain, never touching the sky; the rainbow is a snake; when it hails, children put hailstones on their head "to make themselves grow"), house-building, fire-making (formerly by friction of two pieces of wood, called male and female) now by means of flints, etc. A woman of the neighboring and anthropophagic Yenguas is said to have borne twins (all of whom lived) four times in succession. Miss-births appear to be frequent among the Ngúmba.

Durão (P.) Reconhecimento e ocupação dos territórios entre o Messangire e os picos Namuly. (Bol. Soc. de Geogr. de Lisboa, 1902, 3-17.) The second section (pages 9-13) treats of the natives of the Milange-Namuly country, Portuguese Southeast Africa.

Förster (B.) Geographische und ethnographische Ergebnisse der Expedition F. Fouréaus, 1898-1900. (Globus, Brunschwig., 1902, LXXXI, 247-252.) Brief description, with eight figures, of the countries and peoples seen by Fouréau in his Tchad expedition. On page 252 are brief notes on the Tchua (immigrant, non-negro people) of Bornu and the left bank of the Shari; the very black and ugly Kotoko on the lower Shari; the short-head "bestial-looking" Bagirmi; and the heathen negro tribes of the neighborhood of Ft Archambault.

Girard (H.) Notes anthropométriques sur quelques soudanais occidentaux, Malinkés, Bambaras, Foulahs, Soninkés, etc. (L'Anthropologie, Paris, 1902, XIII, 41-56, 167-181, 329-347.) In this article, with a plate showing types and many tables of measurements and indices, Dr Girard, after a general and geographical introduction, considers in detail stature, skull, face, nose, eye, skin-color, trunk, chest, limbs, finger-reach, etc. The individuals measured were 37 Malinkés, 25 Bambaras, 12 Oaoussoulonkés, 8 Foulahs, 7 Toucouleurs, 5 Savacolais, 4 Kassonkés, and 8 members of other tribes, making 106 in all. The general characteristics of the tribes concerned are: tall stature (range 1606-1920, average 1715 mm.), dolichocephaly (range 66.32-80, average 73.6), flat broad face, exaggerated platyrrhinia,

sometimes excessive prognathism, bronze tint, woolly hair, etc. The Malinkés are the most dolichocephalic, except the Kassonkés; they are also of shorter stature than the others, except the one Mandingo and the two Yolofo measured. The height sitting of the Toucouleurs is 51.30 % of stature, the highest except that of the Mandingo, 53 %. The relation of finger-reach to stature in the case of the Mandingo was 108.1 as compared with the average of 104.20 for the Malinkés and 104.50 for the Bambaras.

Gomme (A. B.) Boer folk-medicine and some parallels. (Folk-Lore, Lond., 1902, XIII, 181-183.) Treats of remedies for rheumatism (cow-dung bath), jaundice (rubbing with cabbage seeds), bronchitis (roasted cat-fur), toothache, ear-ache (pieces of potato put in ears). A child was sometimes placed inside a freshly-killed goat. English parallels are cited.

Grandidier (G.) Madagascar, ses habitants, sa faune et sa flore. (Rev. Scient., Paris, 1902, 4^e s., XVII, 97-102.) Brief notes on the Malagasy, whom the author calls "Indo-Melanesians," the *fady* custom (taboo), *ody* (fetishes), death and funerals, etc. Four figures illustrate types.

Hetherwick (A.) Some animistic beliefs among the Yaos of British Central Africa. (J. Anthr. Inst., Lond., 1902, XXXII, 89-95.) The foundation of the Yao religion lies, in "the *lisoka*, the soul, shade or spirit, which every human being possesses, and which is the inspiring agent of his life." There is "no trace of a theory that the *lisoka* may pass into any animal or inanimate object and thus confer upon it the nature or power of a fetish." The souls "are also recognized as the inspiring agencies in the ravings of the witch detective." Madness, idiocy, fits of epilepsy, sudden insanity, etc., are attributed to the *lisoka*, which is likewise the chief agency in dreams. *Múlungu* is the name of the "aggregate of the spirits of all the dead,"—it is also applied to the human *lisoka*, when regarded as an object of worship, or as an inhabitant of the spirit-world. The distinction in the native mind between the various aspects of the spirit nature is very hazy.

- Johnstone (H. B.)** *Notés on the customs of the tribes occupying Mombasa sub-district, British East Africa.* (Ibid., 263-272.) These notes made in 1898-1899 treat briefly of ideas of property (tribe owns district occupied; growing trees not sold), sky-worship, "evil-eye," secret societies, sacred animals (hyena almost universally so regarded in equatorial East Africa), spells, evil spirits, sacred drum, divination, New Year's dance, divisions of year, marriage (exogamous marriages discouraged), death, inheritance, murder, theft, blood-brotherhood, smallpox (name avoided), rain-stopping, disposal of dead, ideas of justice, medicine men, poisoned arrows, charms, clothing (men practically naked), infanticide, cattle, ideas of number, morals. The Wa-Rabai, Wa-Ribe, and Wa-Kamba are the tribes to which most of these items refer,—the Wa-Duruma and Wa-Digo are also concerned. The Wa-Rabai consider mankind to have sprung from the union of earth and sky. The sky seems to be invoked as "father." The diseases of children are attributed to birds. The luxury of more than one wife is rare. Inheritance is by male primogeniture, and there exists high regard for the presumptive successor.
- King (W. J. H.)** *Myths current in the Sahara desert.* (Folk-Lore, Lond., 1902, XIII, 284-288.) Brief Touareg tales of the stones that shine at night, the enchanted oasis, invocations of spirits, "sand devils" (wind whirls of sand in the air), the "song of the sand" (genii talking), fabulous animals (snakes, *tamer out*, etc.), the "people of the sand" (underground beings), etc., obtained in 1900.
- Klose (H.)** *Religiöse Anschauungen und Menschenopfer in Togo.* (Globus, Brnschw., 1902, LXXXI, 187-194.) Discusses, with 2 figures, the religious ideas (creation-myth, soul-lore, fetishism, sacrifices, deities, spiritism, murder, ordeals, mourning, death and burial, after-life, festivals and music) and the practice of offering up human beings of the Ewe negroes of Togoland. The human sacrifice (and cannibalism) in question seems to be not due to a feeling of revenge and cruelty, but rather the result of belief in the need of sacrifice to the ancestors and the gods. Infanticide is ascribed to fear of evil spirits. The Odente and Sia fetishes are specially described.
- L. (P.)** *Lieder im Gè-Dialekt.* (Globus, Brnschw., 1902, LXXXI, 238.) Text, translation, and music of three brief songs in the Gè language of Little Popo, Togoland.
- Long Ju-Ju.** (Folk-Lore, Lond., 1902, XIII, 166-170.) Newspaper accounts, with plan, of the "Long Ju-Ju," or famous oracle of the Niger delta. See *Jour. Anthr. Inst.*, 1899, vol. XIX.
- Müller (F.)** *Fetischistisches aus Atakpame, Deutsch-Togo.* (Globus, Brnschw., 1902, LXXXI, 279-281.) Treats briefly of the secret "writing" of the fetish-priests (incisions on fragments of calabash shells), circumcision (the people deny a connection with puberty ceremonies or religious ideas), the poison ordeal (for those accused of witchcraft), the ordeal for people suspected of putting a man to death, the mystery-rites of Omolu, a fetish identical with the Ewe, Nyigbla (initiation involves taking a new name), the fetish Sakpadé (a personification of smallpox). Four fetish-writings are figured in the text, and the interpretations as given by the natives recorded. The general speech of Atakpame is a dialect of Yoruba, but the fetish language is Ewe.
- Myer (J.)** *An Egyptian idea of heaven.* (Rec. of Past, Washington, 1902, I, 278-280.) Description, from *Book of the Dead*, chap. CLXXXII, of the entrance into heaven of King Pepi I (ca. 3467-3447 B. C.).
- Myres (J. L.)** *Notes on the history of the Kabyle pottery.* (J. Anthr. Inst., Lond., 1902, XXXII, 240-262.) Discusses, with a plate (ornaments) and a figure, Kabyle pottery in general, the white-faced fabric, Kabyle ornamentation and its affinities. On pages 258-259 is given a table of Kabyle ornaments with Sicilian and Cypriote analogies. Among the conclusions reached are: The hand-made fabrics of Kabylia are survivals from pre-Carthaginian times. The red-faced fabrics descend directly from the widespread red-ware of neolithic age, and present marked analogies with the white-painted red-ware of predynastic Egypt.

The geometrical decoration descends ultimately from the endemic geometrical art of North Africa, but presents signs of non-African contamination. The geometrical decoration of chalcolithic Sicily and the white-faced fabric of Sicily come from North Africa. The white-faced ware of Kabylia "resulted from contact [pre-Carthaginian adventurers from the Syrian coast], in the later bronze age, with the 'whiteslip ware' of the Levant." It is reasonable to infer that "some part of the peculiarities of Kabyle vase-form, and also of Kabyle geometrical ornament, originated from contact with a geometrical style introduced from the Levant by Punic settlers between the ninth and sixth centuries B. C.

Oldest (The) book in the world. (Rec. of Past, Washington, 1902, 1, 306-320.) The precepts of Ptah-Hotep, composed 3900-3500 B. C., translated, with preface of M. Virey, from the latter's version of the Papyrus Prisse by Prof. H. Osgood. This document is valuable for its data concerning ethics, religion, and social ideas in ancient Egypt.

Randall-MacIver (D.) On a rare fabric of Kabyle pottery. (J. Anthr. Inst., Lond., 1902, xxxii, 245-247.) Discusses, with two plates, showing twenty-one examples, the rare black-and-white Kabyle pottery, the seat of manufacture of which is said to be near Toudja on the northeastern borders of Algeria. The rectilinear patterns (triangle, lozenge, band forms) are "closely identical with those of the Cypriote pottery." The lozenge is the most frequent *motif* in Kabyle-work. This still existing pottery has "an unquestionable pedigree of full 2500 years." It is doubtful whether it originated in Libya or in Cyprus.

Roscoe (J.) Further notes on the manners and customs of the Baganda. (Ibid., 25-80.) The negroid Bantu-speaking Baganda live on the western side of the Victoria Nyanza and the data here published "have been gleaned directly from the people, the *Katikiro* (prime minister) having assisted the writer to obtain it in every possible way." The topics treated are: The story of Kintu's (the ancestor) coming to earth, totems and clans (a list, pp. 27-28), birth, naming, the child, adoption, birth of twins, the

lukanda of a chief marriage, disease and death, the water test, death and burial of chiefs and peasants, mourning, death of twins in infancy, bones (objects of fear), murder and suicide, property and inheritance, fire, food, hunting, lion and leopard hunts, fishing, agriculture, war, practices in connection with journeying, government, oaths and ordeals, salutations, arithmetic and money, measurement of time, games, magic and divination, doctrine of souls, ghosts, deities, heavenly bodies, new-moon ceremonies, miscellaneous beliefs and customs, men's duties, dress and decorations, cattle-herding, market-places, sympathy between human beings and plantain trees. The plates accompanying this valuable paper contain the genealogy of the Baganda kings from Katonda, the supreme being, through Kintu, the first monarch of Uganda. The Baganda, who number more than a million, "are a well-built race; many of them are over six feet high, graceful in figure and form and quick to learn." In Uganda "royalty follows the *muziro* of the mother, the common people the paternal *muziro* (totem)." The laws of consanguinity are very strict. Polygamy is universal, but earlier men were restricted to three wives. The dowager-queen and the queen-sister are polyandrous. To the mind of the Baganda disease and death are due to ghosts. The most common ordeal is drinking poison. The use of cowrie-shells "has undoubtedly enabled the Baganda to understand large numbers." The twenty-four hours have ten parts. The national game is wrestling, in which even the king takes part. The ceramic art passes from father to son. Men also make bark cloth (the national dress). Piercing the ears, hips, noses, and extracting or chipping the teeth are not in vogue. All kinds of plantains used as vegetables are "female," those used for making beer are "male."

Rossini (C. C.) La leggenda etiopica di re Arwê. (Arch. p. Trad. Pop., Palermo, 1901 [1902], 521-534.) Historical and comparative study of the ancient legend that the first king of Ethiopia was a snake (*arwê*) which in the course of the centuries has taken on diverse forms. The author's conclusion is that the legend of Arwê must be considered Ethiopic and connected with very ancient local legends. Lives of

saints and other missionary literature have modified the story for European repetition.

Saint-Paul (G.) Réflexions sur les mœurs et sur le caractère des indigènes tunisiens. (Bull. et Mém. Soc. d'Anthr. de Paris, 1902, v^e s., III, 296-308.) Treats of theft, lying, the instinct of the *sof* (family), cruelty, lack of patriotism, the relation of the conquerors and the conquered, condition of women, parental and filial affection, religion, *djinns*, fasting (*ramadan*), etc. The Tunisian Arab is an incorrigible liar. He has the sense of devotion to the household that feeds him. In peace, at least, he is not cruel. Every native ought to have the possibility of becoming what his character and intelligence make him capable of in the social life of the country. Since the Arabs are good fathers, all of them cannot be bad husbands.

Schieritz (E.) Der Meruberg in Deutsch-Ostafrika und seine Umgebung. (Globus, Brnshwg., 1902, LXXXII, 85-89.) On page 87 is a note on the people of Aruscha, with pictures of three chiefs.

Schmick (W.) Les cercueils égyptiens de la Société de Géographie de Lisbonne. (Bol. Soc. de Geogr. de Lisboa, 1902, 55-60.) Brief account of five coffins and three separate covers from Der-el-Bahri, discovered about 1891. Inscriptions and ornamentation are noted, — on all there is expressed a *horror vacui*. All the coffins were made for women.

Schumann (C.) Ueber die Gebräuche, welche die Bebenä bei Begräbnissen üben. (Verh. d. Berliner Ges. f. Anthr., 1902, 127-130.) Brief account of the funeral ceremonies of the Bebenä of Lupembe in German East Africa. Preparation of the corpse, washing, fire-ceremony, mourning, symbolism, etc., are described. The importance of agriculture is seen in the rôle played by it in the ceremonies.

Schweinfurth (G.) Altägyptische Entdeckungen. (Verh. d. Berliner Ges. f. Anthr., 1902, 98-100.) In letters to Virchow the author gives an account, with two figures of recent archeological discoveries at Karnak, Medinet Abu, the mountain-slopes of Thebes, etc. Hr. Schweinfurth has confirmed Pitt Rivers'

discovery of flint artifacts in the last-mentioned region in recent geological deposits.

— Ueber paläolithische Kieselartefacte von Theben mit zweifacher Bearbeitung. (Ibid., 261-262.) Brief description of two flints from Thebes showing evidences of two (temporally remote) manipulations by man.

Seidel (H.) Der Fischfang in Togo. (Globus, Brnshwg., 1902, LXXXII, 111-114.) The negroes of Togoland use the throwing-net and the dragnet, with or without a canoe. In shallow waters fishing by hand is practised. Fish-weirs and fish-traps are also employed. In the lagunes and in the streams of the interior fish are often speared. Angling seems to have been learned from the whites. Fish-poisoning by means of *Euphorbia* juice likewise occurs. This same posion is used in a fetish-ordeal (thrown into the eyes of the accused), and is also rubbed into the navel of the new-born child. For the negro fishing is food-getting; the idea of sport is foreign to him.

Spiess (C.) Zaubermittel der Eweher in Togo. (Ibid., LXXXI, 314-320.) Describes, with 32 figures, a collection of fetish objects obtained from a priest of Waya in Togoland. The number of means of magic in the Ewe country is legion. There are fetishes belonging to the individual, family-fetishes, house-fetishes, path and field fetishes, gate-fetishes, special fetishes of priests, village and national fetishes, etc. "Medicine," ordeals, and the like are briefly referred to. The Ewe are more zealous in the adoration of evil than in the worship of good spirits. The same word is used for the soul in a living man and his shadow, but another term is applied to the soul when separated in death.

ASIA

Banks (E. J.) Cyzicus. (Rec. of Past, Washington, 1902, I, 304-306.) Brief historical account, with reference to work of British School of Archeology (Athens). A number of Greek inscriptions and some sculptures have been found. The ruined temple of Hadrian has suffered much from Turkish vandals.

Belck (W.) Ueber die Ausgrabungen in Schamiramalti. (Verh. d. Berliner Ges. f. Anthr., 1902, 125-127.) Brief account of excavations and finds (a few bronze and obsidian objects in the upper layer) at Shamiramalti, a suburb of Van. In the neighboring village of Tsorawanz giant *pithoi* (in pieces) were met with in the ruins of Chaldic mounds.

Broquet (C.) Flèches dont se servent pour chasser les Chinois Laf de la presqu'île de Lei-Chau, Province du Quang-Tong. (Bull. et Mém. Soc. d'Anthr. de Paris, 1902, 2^e s., III, 181.) Brief description of the blow-gun arrows used by the Laf of Kwang-Tong to shoot birds and the smaller wild animals, and the method of using them. They are generally efficacious at a distance of 20 to 30 paces. The arrow weighs 15 gr., is 65 cm. long, and is often iron-tipped.

Capitan (L.) L'histoire de l'Élam d'après les derniers travaux de la mission de Morgan. Étude des séries exposées. (Rev. de le l'Éc. d'Anthr. de Paris, 1902, XII, 187-200.) Résumés, with 22 figures, J. de Morgan's recent works *La délégation en Perse* (Paris, 1902) and *L'histoire de l'Élam* (ibid.).

Chalatianz (B.) Die armenische Helden-sage. (Ztschr. d. Ver. f. Volksk., Berlin, 1902, XII, 138-144.) This first section treats of the home of the Armenian hero-legend (the Sassun country on the west shore of Lake Van), the storytellers (each village has one), technique (the outline of the legend is sketched on pages 141-142), influence of foreign legend-cycles (marked impress of Iranian epic), content (abstract of the legends of Sanasar and Aslimilik, the elder Mher, David). The legends relating to David and his son Mher form the richest part of Armenian hero-story.

Crooke (W.) Some notes from north-western India. (Folk-Lore, Lond., 1902, XIII, 188-190.) Treats of thunder-storm and first-born, worship of the Monkey-god, charm to avert cattle-disease (the magic square used in connection therewith is given on page 190).

— An Indian ghost-story. (Ibid., 280-283.) A Bengali tale in which the Bhûts or spirits figure. Comparative notes are appended.

Dames (M. L.) Balochi folklore. (Ibid., 252-274.) Treats of heroic ballads and their content, tells of descent, legends of shrines and saints, ordeal by fire, omens, aversion to fish, black bear superstition, sacred trees, memorial cairns, tombs, position of women, feuds regarding women, *dastânagh* (brief love-poems sung to flute accompaniment), marriage, elopements, peace-making, dances, loyalty to refugees, etc. The mountains figure much in the poetry of the Balochi. Some of the ballads go back beyond the sixteenth century and contain a pre-Mohammedan mythological element. A few names suggest totemism. Mohammedanism, "though nominally followed, has not much effect on the wilder and nomadic Balochis." In the hill country, tombs are "much more elaborate and permanent than houses." Insults to women are gravely resented.

Delisle (F.) Les fouilles de M. J. de Morgan à Suse. (L'Anthropologie, Paris, 1902, XIII, 487-495.) General account of de Morgan's excavations at Suse. The evidences of an ancient stone age, the presence of obsidian with flint in a non-volcanic region, the evolution of pottery, the *kuddurus*, the evolution of the bronze industry, the ethnic dualism, figurines, succession of races, etc., are briefly referred to and commented on.

De Morgan (J.) Work in Persia. (Rec. of Past, Washington, 1902, I, 231-245.) Résumés from report. Trip from Teheran to Suse, excavations at Suse, inscribed bricks, monuments, etc., are treated of. The Anzanite ruins, the Achemenid ruins, the Græco-Persian ruins are distinguished. The city of Suse appears to have disappeared entirely before the Sassanian epoch. The Græco-Persian ruins contain no important buildings. A most important monument is the stele of Naram-sin (?), ca. 3800 B. C.

Duckworth (W. L. H.) Some anthropological results of the Skeat expedition to the Malay peninsula. (J. Anthr. Inst., Lond., 1902, XXXII, 142-152.) This paper, with a plate (tracings of feet), 2 figures (skull), and tables of anthropometric and craniological data, treats in detail of the skull and other bones of a Pangan Sakai and of the measurements (by Mr Laidlaw) of 11 natives (5 adult

males, 3 adult females, 3 children). The skull is mesaticephalic and mesocephalic (index 78.7, capacity 1,425 cc.). The average cephalic index of the men is 78.9, of the women 81.1, the nasal indices 101.2 and 97.4.

Dussaud (R.) Les premiers renseignements historiques sur la Syrie. (Rev. l'Éc. d'Anthr. de Paris, 1902, XII, 251-264.) Treats of Syria in the stone age, the Phenicians, primitive navigation, connections between ancient Egypt and Syria, Babylonia and Syria, the Hittites, etc. Phenician civilization had a two-sided development—maritime trafficking with Egypt and the islands of the west; land commerce with Chaldea, etc. The evidence of the Tell-el-Amarna tablets is resumé. A state of affairs closely resembling that of the times of the Mamelukes is revealed by these documents.

Fuhse (A.) Das Stempelwesen in Japan. (Globus, Brnschw., 1902, LXXXI, 185-187.) Brief account of Japanese seals and stamps, with three figures. Based on Spörry's *Das Stempelwesen in Japan* (Zürich, 1901).

Gallenkamp (W.) Dravidische Volks-poesie. (Ibid., 62-64, 79-81.) Reproduces in German translation from Grover's *The folk-songs of Southern India* (Madras, 1871), five Kanarese, four Telugu, one Tamil, and two Coorg folk-songs. The author thinks that in spite of all the influences of Brahmanism and other absorptive factors the primitive folk-poetry of the Dravidian peoples of southern India is still fresh in their memory and will live long. The native poetry possesses a high moral and a deep religious character.

Greeger (E.) Annamitische Tiergeschichten. (Ibid., 301-304.) Based on Cadière's article in the *Bull. de l'École Française de l'Extrême Orient*. Gives brief tales and items of Annamite folklore concerning the owl, rabbit, tortoise, diver, peacock, black cuckoo, silk-worm, wasp, raven, lizard, buffalo, etc., Among the interesting episodes in Annamite beast-story are the race between the tiger and the tortoise, the gambling of the birds, etc. The buffalo once had the power of speech. Among the Annamites almost every animal has its story, song, or proverb.

Hartland (J. C.) Burial custom in Japan. (Folk-Lore, Lond., 1902, XIII, 276.) Brief description, with figure, of a bamboo and cloth structure erected in commemoration of a woman with child who dies before delivery. Some further notes by E. S. Hartland are on page 277.

Holland (T. H.) The Kanets of Kulu and Lahoul, Punjab: A study in contact-metamorphism. (J. Anthr. Inst., Lond., 1902, XXXII, 96-123.) This paper, which is accompanied by three plates of types and twelve tables of anthropometric data, discusses the physical characteristics of the Kanet caste in Kulu and their modification by contact with the Tibetan tribes in the neighboring taluk of Lahoul. The sections are: Introduction, conditions of contact, anthropometry (measurements of thirty Lahoul and sixty Kulu Kanets), discrimination of unaltered constituents from the results of atavism, degree of variation, etc. Stature, facial angle, cephalic, naso-malar and nasal indices "point to the presence of a large proportion of Tibetan blood in the Lahoul Kanets." The Lahoulis give more uniform results than the Kulu people. In the home of the Kanets "occupation is the leading character of distinction, not descent." The ordinary Kanet has some "black" blood. The Kanets of Lahoul "are a contact-product due mainly to true fusion with their Tibetan neighbors and are not in any great degree due to the Hinduizing of purely Tibetan families."

ten Kate (H.) Zur Psychologie der Japaner. (Globus, Brnschw., 1902, LXXXII, 53-56.) The racial psychic characteristics of the Japanese are lack of a love of truth, absence of depth of intellectual and emotional life, incapacity for comprehending abstract ideas. Belonging more particularly to them as a people may be reckoned lack of individuality, pseudo-stuporose states, suggestibility, instability, lack of perseverance, paradoxicality, vanity and jingoism, the last two as modern traits. Individual characters are, of course, not limited to these peculiarities. Dr ten Kate is also of opinion that the great mass of the Japanese people has in no sense been largely influenced by European culture. The mixture of immigrant Malay with the aboriginal northern

element may account for some of the traits of Japanese character.

Knosp (G.) Das annamitische Theater. (Ibid., 11-15.) After a general account of the theater in Annam (classical and popular), the author gives the German version of the play of "The Victory of Trinh over the Conqueror Mac." A plate in colors containing the principal personages accompanies the article. Although imitative in many ways of the Chinese, the Annamese theater is in others very independent. The present ruler of Annam, Thanh-Thai, is a special patron of the stage. Little new theater-literature seems to be written.

von Luschan (F.) Prähistorische Bronzen aus Kleinasien. (Ibid., 295-301.) Brief account, with 26 figures, of 78 old bronze objects (daggers, spear-points, axes, chisels, implements, ornaments, etc.) found in 1889 in an earthen vessel at Soli-Pompeiiopolis, whose ruins are among the most extensive in all Asia Minor. The specimens are now in the Royal Museum, Berlin. The find belongs probably to the second millennium, B. C.

Oppert (G.) Ueber den Salagrama-Stein. (Verh. d. Berliner Ges. f. Anthr., 1902, 131-137.) Describes the Salagrama, a stone formerly worshiped by the primitive inhabitants of India as a symbol of female energy, and now looked upon as the manifestation of Vishu. The varieties of this stone are very numerous. The Salagrama is found on the upper Gandaki in Nepal, a "blessed" region. The interpretation of the peculiarities of the Salagrama is sexual. It is also a luck-stone in this world and the next.

Rawlinson (H. C.) The Behistun inscription. (Rec. of Past, Washington, 1902, 1, 327-350.) Reprint of the first chapter of his memoir, together with a translation of the inscription as it was published by General Rawlinson in the *Journal of the Royal Asiatic Society* in 1847.

Roediger (M.) Japanische Frauennamen. (Zeitschr. d. f. Volksk., Berlin, 1902, XII, 226-227.) Résumés briefly Prof. R. Lange's detailed study of 794 names of Japanese women from Tokio and its neighborhood, published

in the *Mitteilungen des Seminars für Orientalische Sprachen zu Berlin* for 1901-1902. The one personal name follows the family name. Japanese names for women are more numerous than with Europeans. Most names are dissyllabic and Japanese, some monosyllabic and Chinese. Trissyllabic names are antiquated and elegant; quadrisyllabic and polysyllabic, literary and also poetical appellations of *filles de joie*. Occupation-names, nick-names, animal-names, local names, and comparative and desiderative names are in vogue. Dark blue, green, and purple are used for women's names, but black and white for dogs.

Rose (A. J.) Unlucky and lucky children, and some birth superstitions. (Folk-Lore, Lond., 1902, XIII, 278-280.) Magic power of first-born, marriage of first-born, twins (no superstitions in Punjab), sequence of birth, inauspicious and auspicious children, birth-custom. Items of Punjab folklore. See also pages 197-198.

S. (E.) Yopal, mohammedanische Singhalesin, aus Hambantota. (Globus, Brnschw., 1902, LXXXII, 109-110.) Brief notice, with picture, of a typical Singhalese woman from the southeast coast of Ceylon, representing possibly the more or less mythical Witchayas, forefathers of the Singhalese. She is a belle, and a Mohammedan.

Sakhokia (T.) et Azoulay (L.) Phonétique du géorgien. (Bull. et Mém. Soc. d'Anthr. de Paris, 1902, v^e s., III, 268-274.) A descriptive and explanatory list of the vowels and consonants of the Georgian language, (M. Sakhokia is a Mingrelian) of the Caucasus. A peculiarity of Georgian seems to be the existence of *ph*, *t*, *ts*, *tch*, *h'*, followed by a special short guttural. The Phonographic Museum of the Society now has a number of ethnographic and phonetic phonograms.

Schmidt (E.) Die Prähistorie des südlichen Indiens. (Globus, Brnschw., 1902, LXXXI, 213-218.) This account of the prehistoric remains of southern Hindustan, which is illustrated with 19 figures, is based on Foote's *Catalogue of the Prehistoric Antiquities*, reviewed in the *American Anthropologist*, 1901, N. S., III, 757-758.

Sg. Tsingtau und Kiautschou. Ein Kulturbild aus Deutsch-China. (Ibid., 229-236.) General account, with six figures, of the culture-phenomena of Tsingtau and Kiautschau in German China. The writer's view is optimistic.

Skeat (W.) Malay spiritualism. (Folk-Lore, Lond., 1902, XIII, 134-165.) Gives the main facts concerning the spiritualistic beliefs of the Peninsular Malays, with special reference to motor-automatisms of the type of the divining-rod. Among the topics treated are: The palm-blossom dance, the dancing fish-trap, the dancing spoon, the divining lemon, the cup and the ring ordeal, the sieve ordeal, the divining-rod, sendings (pointings) or actions at a distance, possession and devil-dancing. A number of songs used in connection with these ceremonies and practices are given in English text. These Malay data support the view that we are dealing here with "productive magic"—their primal and primitive object having been to increase the food-supply. The "dancing" ceremonies are thus, perhaps, "survivals in magic." The practical object of many is quite clear.

— The wild tribes of the Malay peninsula. (J. Anthr. Inst., Lond., 1902, XXXII, 124-141.) The topics treated (with a plate and 3 figures) are physical characteristics, food, hunting and fishing, habitations, arts and crafts, dress and ornament, music and dancing, feasts and songs, marriage, funeral, magic, religion, etc. The three types of these wild tribes are the woolly-haired Negritos or Semang, the wavy-haired Sakai, and the straight-haired Jakun (called "savage Malay"), hill Jakuns and sea Jakuns (Oranglaut, "Sea Gypsies," etc.). These tribes have the prehensile toe and are good tree-climbers. The Jakuns have a keen power of scent and a peculiar walk. Sight and hearing are naturally good and become wonderfully quick through training. The weapon *par excellence* is the blow-pipe with poisoned darts. Rock and leaf shelters are common,—"the simplest form is a single big palm-leaf, which is planted in the ground to afford the wanderer some slight shelter for a single night." Bark cloth is used for dress. Tattooing, or rather scarification, exists in a limited area among the wilder interior tribes,

while face and body painting are creeping in through Malay influence. The bamboo Jew's harp, the nose-flute, and the drum are the chief musical instruments. Harvest songs were formerly much in vogue. The pursuit of the bride by the bridegroom round the "ant-heap" is an interesting ceremony, as is also the catechism of the bridegroom by the women. The Semang funeral is simpler than that of the other tribes. Exorcism of demons is much practised. The "tiger-man" resembles the European werewolf. The "Island of Fruits" is the next world, reached by a tree-trunk across a boiling lake. The religion of these tribes has been little affected by Mohammedanism.

Smith (G.) The Chaldean account of the deluge. (Rec. of Past, Washington, 1902, I, 363-380.) Reprinted from the publications of the Society of Biblical Archeology, 1872, II, 213-234.

Solomon (V.) Extracts from diaries kept in Car Nicobar, 1895-1901. (J. Anthr. Inst., Lond., 1902, XXXII, 202-238.) This paper, with a plate and an introductory note by Col. Temple, contain first-hand observations "of peculiar value, since the Nicobarese ceremonies and public affairs of life are generally conducted at night," for seeing them the author had especial advantages as agent and adviser to the natives, as well as school teacher. The notes have been revised by Mr E. H. Man. Among the topics briefly treated are: Punishment, feasts and their etiquette, days of rest, disease and death, canoe-races, grave-digging, burial, decoration, expelling devils, jungle-clearing, snake-bite cure, eclipse of moon and legend of its origin. The number of festivals and ceremonies referred to or described is very great and some of them are of considerable importance. On pp. 204-210, the interesting *Kana-haun* (lit. = "Curry of pig's flesh"), or feast of the disinterring of the bones of the dead, is described in detail. More or less extended accounts are also given of the cleaning of the Elpanam (214-216), the Mafai (224-226), or "making a devil-driver, ceremony." To Mr Solomon's paper are appended "Six Weeks on Cape Nicobar" (p. 236) by A. L. Butler, "Note on a tour of inspection through the Nicobar islands" (236-237) by E. M. Buch-

anan, and "Notes on cases in Port Blair of convicts sent there for crimes in relation to the desire to procure sons" (237-238). The last treats of killing of a female child, killing a fat boy, and setting fire to a hut, all by advice of sorcerers, to get male children. The brief notes by Messrs Butler and Buchanan refer to running *amok*, marriage, canoe-racing, dancing, wrestling, fishing, fire-wood, house-building, canoes, etc.

Stenz (G. M.) *Arzt und Apotheker in China*. (Globus, Brnschw., 1902, LXXXI, 383-386.) Brief account, with 3 figures, of the physician and druggist in China, their practices, treatment, etc. The best period of Chinese medicine seems to have been under the Pan dynasty (618-707 A. D.), when the art of healing was much encouraged by the authorities, medical schools established, etc. The drugs used are mostly herbal. There is at least one druggist in every large town. Children's diseases are frequent and a special treatise on this subject dates from the eleventh century. Dentistry is not especially developed, by reason of the good teeth of most of the natives. Eye, ear, and skin diseases are widespread. Massage and acupuncture are in vogue. Surgery is practically unknown.

de Uffalvy (C.) *Iconographie et anthropologie irano-indienne*. (L'Anthropologie, Paris, 1902, XIII, 433-465, 609-620.) Continued from vol. XI. These two sections, with four plates and twelve figures, treat of India. The following topics are considered: Difficulty of iconographic research; antiquity of Aryan invasion in India (the fifteenth century B. C. is the extreme limit of the Aryan settlement in the Panjab); historical notes (Buddha, tree and serpent cult, various invasions of foreigners and barbarians); the physical type of the ancient Hindus according to the writers of antiquity; the ancient coins and intaglios of India; the sculptures of Gandhara (several distinct types are figured) called Græco-Buddhistic; the bas-reliefs of Sanchi, Amaravati, Buddha-Gaya, and Bharhut; the subterranean temples of Adjanta, with their frescos; the Indian miniatures of the seventeenth to nineteenth centuries. The author makes good use of Fergusson, Grünwedel, Griffiths, and other recent writers.

Vaschide (N.) et **Piéron** (H.) *Le rêve prophétique dans la croyance et la philosophie des Arabes*. (Bull. et Mém. Soc. d'Anthr. de Paris, 1902, v^e s, III, 228-243.) Résumés the data concerning the prophetic dream in the works of Arabian philosophy and folk-thought (Mahomet, anecdotes from 704 A. D. down, the Arabian Nights, Ibn-Batuta, Mashudi, etc.). The Arabs kept alive the Oriental tradition of the prophetic dream and passed it on to the nations of the Occident (or rather revived it) during the Middle Ages.

Winternitz (M.). *Dr M. A. Steins Forschungsreise in Ostturkestan und deren wissenschaftliche Ergebnisse*. (Globus, Brnschw., 1902, LXXXI, 293-295, 320-323.) Résumés the researches in 1900 of Stein in Kashgar, Khotan, Yötkan, Dandān-Uiliq, Rawak, the Endere region, Ak-sipil, etc. Based on Stein's *Preliminary Report* (London, 1901). The numerous (more than 500) wooden tablets in Kharoshthi script, discovered in the ruins on Niya river, are probably "the oldest Indian writings known."

Wray (L.) Notes on dyeing and weaving as practised at Sitiawan in Perak. (J. Anthr. Inst., Lond., 1902, XXXII, 153-155.) Treats, with one plate, of the method of weaving (silk from China) carried on to a limited extent at Sitiawan by a few Malay women. It seems to have been introduced from Kelantan, and "differs from that in other parts of Perak in several important particulars." The processes resemble those of the Sarawak and Sea Dyaks. The thread before weaving, not the woven cloth, is tied and dried; the thread of the warp, generally, is dyed to produce the pattern, the woof being of one color.

Wright (F. B.) *Ancient Samarkand*. (Rec. of Past, Washington, 1902, 1, 259-271.) Historical and general description, with ten illustrations, of Samarkand, the ancient capital of Timur, now under Russian control. The mausoleum of Timur-leng, the Shir-Dahr Medrass (built in 1618), the Bibi-Khanum, etc., are referred to.

INDONESIA, AUSTRALASIA, POLYNESIA

Best (E.) *Maori nomenclature*. (J. Anthr. Inst., Lond., 1902, XXXII, 182-

- 201.) These "notes on the consanguineous, affinitative, personal, tribal, topographical, floral, and ornithological nomenclature of the Maori race of New Zealand" relate to the Tuhoe tribe. After a general discussion of tribal organization and the names connected therewith, the author gives (pp. 185-191) a list of terms of relationship, with explanations of their uses and significations, a short list of terms of address (191-192), and examples (192-194) of the use of terms of relationship in connection with the genealogy (201) illustrating Maori consanguinity. Personal nomenclature (name-giving and name-changing, sacred names) is treated on pp. 194-196, and topographical nomenclature (place-names, plant-names, bird-names) on pp. 196-197. On pp. 198-200 is given a table of the "system of consanguinity and Maori nomenclature," with respect to sex, the persons spoken to and of, the speaker, etc. Among the Maori people "there is no family life as we know it; the family group or sub-clan obtains and would appear to take the place of the family." Children are often taken and reared by relatives. Primogeniture still rules. Children "never say 'father' or 'mother' in addressing their parents, but call them by their names, or an abbreviation thereof in common use." The changing of personal and topographical names was and is still common in Maoriland. The sex of trees, the form-changes of leaves, stages of growth, etc., figure in Maori floral nomenclature. The male and the female of birds are distinguished, and some birds have as many as four names, the cry of the *kākā* parrot has three, etc.
- Chamberlain (A. F.)** Notes of Tagal folk-lore. (J. Amer. Folk-Lore, Boston, 1902, xv, 196-198.) Notes on folklore words and phrases in Pardo de Tavera's *El sanscrito en la lengua Tagalog* (Paris, 1887).
- Duckworth (W. L. H.)** Craniological notes on the aborigines of Tasmania. (J. Anthr. Inst., Lond., 1902, xxxii, 177-181.) Gives, with two figures and table of measurements, results of examination of three Tasmanian crania and two mandibles in the Anatomical Museum at Cambridge. The cephalic indices of two of the crania are 73.9 and 72.3, and their capacity 1,130 and 1,130 (appr.) cc. Judged by cranial characters, "the affinities of the Tasmanians are evidently with the aborigines of the neighboring island continent, rather than with any other race, and in these characters no striking resemblances to any of the dwarf races are demonstrable."
- Eylmann (E.)** Das Feuermachen der Eingeborenen der Colonie Süd-Australien. (Verh. d. Berliner Ges. f. Anthr., 1902, 89-94.) Gives account of the method of fire-making in use among the aborigines of South Australia (the Narryngeai, Arünta, etc.), boring and rubbing. On page 92 is given the Narryngeri legend of the obtaining of the first fire.
- Ferreira (J. G.)** Calculo aproximado da população de Timor em 1882. (Bol. Soc. Geogr. de Lisboa, 1902, 129-131.) According to this estimate the population of Timor in 1882 was 301,600, of whom 23,048 were Christians. Fifteen languages are represented.
- Krause (W.)** Ueber einen besonderen, jetzt ausgerotteten Stamm von Ureingeborenen Australiens. (Verh. d. Berl. Ges. f. Anthr., 1902, 263-264.) Brief notes, on oral testimony of Mr Newland, of the now extinct Parkingees, who in the seventeenth century dwelt in the southwestern corner of what is now Queensland.
- Lissauer (A.)** Ueber die Anthropologie der Anachoreten-Inseln. (Ibid., 130-131.) Cites ethnographic data from a letter of Professor Thilenius (who visited these islands in the spring of 1899). The use of the skull as ornament and memorial is noted. See *American Anthropologist*, 1902, N. S., IV, 341.
- M. (V.)** Ein Zauberhemd des Filipinos. (Globus, Brnswgw., 1902, LXXXI, 287.) Brief account, with two figures, of an *anting-anting*, or magic skirt, from the Tagal country. Based on Allen's article in the *Army and Navy Journal*, 1901, 687.
- Sarasin (P. u. F.)** Neue Reise in Celebes. (Ibid., LXXXII, 28-29.) Brief extracts from letters treating of the To Ala or "wood men" of the mountain-forests of Lamontjong, a wild tribe of whom many curious stories are current. They appear

to be a new people, the most primitive yet discovered in Celebes. They live in caves, cultivate maize somewhat, are monogamous, do not lie, and are said not to count above one, etc.

Schmidt (W.) Die Fr. Müller'sche Theorie über die Melanesier. (Mitth. d. Anthr. Ges. in Wien, 1902, XXXII, 149-160.) Father Schmidt rejects Müller's idea that the Polynesians were the first, the Melanesians a second, section of the migration represented by the oceanic peoples, but accepts that part of his theory which sees in the Melanesians a mixed race sprung from the Papuan aborigines and Austronesian (Malayo-Polynesian) immigrants. The existence in the Solomon islands of the Savo, a Papuan language, proves the case. The foreign element in the language of the Paumotu group is also to the point.

Schoetensack (H.) Erläuternde Bemerkungen, etc. (Verh. d. Berliner Ges. f. Anthr., 1902, 104.) Explanatory notes to the author's article noticed in the *American Anthropologist*, 1902, N. S., IV, 176.

Seligmann (C. G.) Note on the preparation and use of the Kenyah dart-poison *ipoh*. (J. Anthr. Inst., Lond., 1902, XXXII, 239-244.) Treats, with two plates and a figure, the sources and use of *ipoh*, the process of collecting the upas sap, its inspissation and subsequent application to the sharpened strips of *nibong* wood (darts) are described as witnessed at the house of a Kenyah chief at Long Tamala on Baram river, Sarawak. The collection and manufacture were "essentially common-place and utilitarian," and "no magic was used, nor were any charms or incantations uttered at any stage of the proceedings." The Kenyahs use the dried juice of the *Antiaris toxicaria* alone as a dart-poison. The process of manufacturing the blow-pipe is described (p. 241) and the result of a contest at target-shooting is given (p. 244). Besides being employed for a dart poison *ipoh* is administered internally as a medicine for malaria and (more rarely) dysentery. It is also sometimes applied to foul ulcers, snake-bites, etc. The addition of arsenic to the dart poison occurs rarely, if at all, in Borneo.

Sister's (The) son in Samoa. (Folk-Lore, Lond., 1902, XIII, 199-201.) Brief criticism by Dr Rivers of an article by Monsignor Stanley and the latter's reply.

Thilenius (G.) Alfred C. Haddons Forschungen auf den Inseln der Torresstrasse und in Neu-Guinea. (Globus, Brnschw., 1902, LXXXI, 327-333.) This, article, with map and 10 text-illustrations, is based on Haddon's *Head-Hunters, Black, White and Brown* (London, 1901). Effects of contact with the whites, religion, festivals, totemism, marriage, fishing, death and burial, society, etc., are briefly treated.

Thomson (B.) Notes upon the antiquities of Tonga. (J. Anthr. Inst., Lond., 1902, XXXII, 81-88.) Discusses, with 3 plates and a figure, the Haamonga stones near Kolonga (East Tongatabu), the artificial hill near Holeva at the mouth of the Mua Lagoon and similar mounds in various parts of the group, and the *langi* or tombs of the sacred kings (Tui Tonga) at Mua. The Haamonga, whether built for a throne or as a memorial, is "connected with the reign of Tui-ta-tui, who lived in the fourteenth century." Mr Thomson thinks that "the Haamonga stones were quarried from the reef opposite their present situation, and set up by means of inclined planes of earth." The artificial hill near Holeva is the oldest monument in Tonga, and its origin can only be conjectured — perhaps the site of a meeting house, or *kava*-drinking place. The oldest of the tombs of the kings date from before 1535 A. D. These stones are of diverse sizes and degrees of importance.

AMERICA

A. Die ethnographischen Studien in den Vereinigten Staaten. (Globus, Brnschw., 1902, LXXXII, 75-76.) Brief account of the work of the Bureau of American Ethnology and investigations associated therewith.

Albright (J. G.) Exploration of a mound on Fox island, in Rest lake, Vilas county, Wis. (Wisconsin Archeol., Milwaukee, 1902, II, 14-15.) The condition of the bones and the nature of the objects discovered (among them a pair of German-silver bracelets) suggest that "this mound at

least, and possibly the entire group, were erected at no very distant date, certainly within the past 75 or 100 years." The mound was explored in June, 1902.

Andree (R.) Die älteste Nachricht über die sogenannten Azteken-Mikrocephalen. (Verh. d. Berl. Ges. f. Anthr., 1902, 219-221.) Gives an account of a pamphlet published at New York in 1850 as "translated from the Spanish of Pedro Velasquez of San Salvador" in which the "Aztec dwarfs," described as "descendants and specimens of the sacerdotal caste (now extinct)," are first mentioned. The story is quite a romance.

Ashmead (A. S.) Introduction of leprosy into America from Spain — that disease was not pre-Columbian in the western hemisphere, but syphilis was. (St Louis Med. and Surg. J., 1902, LXXXIII, 66-82.) In this article, with 15 figures, Dr Ashmead cites from the Archives of the Indies, preserved in the library at Seville, evidence to show that the contentions of the title are true. The immunity of the Amerind from leprosy is very marked. The deformation of human figures on Peruvian vases do not represent leprosy affections. See also pages 117-118.

Bach (R.) Tyrrells Forschungsreise zwischen dem Grossen Sklavensee und der Hudsonbai, 1900. (Globus, Brn-schw., 1902, LXXXII, 37-43, 56-62.) Résumés, with 10 figures, the data in Tyrrell's *Exploratory Survey between Great Slave Lake and Hudson's Bay* (Ottawa, 1902). The illustration on page 59 represents Thelon river Eskimo.

Baum (H. M.) Pueblo and cliff dwellers of the southwest. (Rec. of Past, Washington, 1902, 1, 357-361.) Preliminary report of the Records of the Past Exploration Society expedition of 1902, with 4 illustrations. Dr Baum considers that the Cliff Dwellers and the Pueblos were one and the same people, but holds the rather strange view that "the evidence is overwhelming against the theory of any relationship whatever" between the present tribes of North American Indians and the prehistoric race of the southwest.

Brown (C. E.) The stone spud. (Wisconsin Archeol., Milwaukee, 1902, II, 15-28.) Treats, with 3 figures, of the classification of stone "spuds, hoe, spade and paddle-shaped instruments, and ceremonial spades," etc., and of stone spuds in Wisconsin collections. One class of these objects seems to belong naturally to the southern and southeastern United States,—they do not appear to be known in Europe.

Chamberlain (A. F.) International Congress of Americanists at New York. (Science, N. Y., 1902, N. S., XVI, 884-899.) Account of thirteenth session of the Congrès International des Américanistes at New York, October 20-25, 1902, with list of delegates and communications, notes on papers read, etc.

Chamberlin (T. C.) The geologic relations of the human relics of Lansing, Kansas. (Journ. Geol., Chicago, 1902, X, 745-779.) Discusses, with 13 figures, the geological problems connected with the finding of the "Lansing man." Professor Chamberlin considers that the human remains in question have "a very respectable antiquity, but much short of the close of the glacial invasion." See *American Anthropologist*, 1902, N. S., IV, 743.

Clark (C. D.) [Throwing-stick of Micmac Indians.] (Bull. Free Mus. Sci. and Art, Phila., 1902, III, 250.) Brief description, with figure, of throwing-stick from Digby, N. S. Now used only in festivals, this implement was formerly used in tribal fights. It is said to carry 600 yards.

Collins (V. L.) Indian wards at Princeton. (Princeton Univ. Bull., 1902, XIII, 101-106.) Summarizes, from archives at Washington, the attempts to confer upon Thomas Killbuck and his cousin, George White-eyes, son of a Delaware chief, and a descendant of Taimenend (eponym of the more famous Tammany of the present day), an academic education at Princeton at the end of the eighteenth century.

Davidsohn (C.) Ueber die brasilianischen Xiphopagen Maria-Rosalina. (Verh. d. Berl. Ges. f. Anthr., 1902, 245-247.) Brief account, after Chapot-Prévost and Ramos, of the xiphopagus twins (born

1893), Maria and Rosalinda of Espirito Santo in Brazil. The latter survived the surgical operation which separated them.

Duncan (J. J.) Indian day schools. (So. Workman, Hampton, Va., 1902, xxxi, 541-545.) Approves of the day-school system from results seen at Pine Ridge.

Förstemann (E.) Die Kreuz-Inschrift von Palenque. (Verh. d. Berliner Ges. f. Anthr., 1902, 105-121.) Detailed interpretative study of the Palenque cross inscription. An attempt to make a consistent whole of the hieroglyphs. The ending of a war, political events, sacrifice, etc., are among the subjects dealt with in this famous inscription.

Gleason (F. D.) Forces for good on Indian reservations. (So. Workman, Hampton, Va., 1902, xxxi, 623-628.) Discussion of work of the Indian catechist and the returned students' associations. Herbert Welsh, a full-blood Sioux, is a deacon of the Episcopal church, and assistant to the Rev. Philip Deloria, also a full-blooded Indian, at St Elizabeth's mission, south of Ft Yates.

Huonder (A.) Die Völkergruppierung im Gran Chaco im 18. Jahrhundert. (Globus, Brnshwg., 1902, LXXXI, 387-391.) Brief account, after the Ms. of a Spanish missionary ca. 1767, of the distribution of the Indian peoples of the Gran Chaco in the eighteenth century. Chiriguano (of the Serrania, or mountain country of the west, the most important "nation"), the Mataguayos (east and south of the Chiriguano, split into many tribes), the Vilelas (more to the south, toward the western border of the Chaco), the Lules (between the Rio Salado and the Rio Grande and south of the Vilelas), the Tobas (neighbors of the Vilelas on the Rio Grande and below them between that stream and the Pilcomayo), the Mocobis (on both banks of the Rio Grande below the Tobas), the Abipones (in the eastern section of the Chaco), the Lenguas (on the northern banks of the Pilcomayo), the Guanas (in the forest near the west bank of the Paraguay), the Guaycurus or Mbayas (on both sides of the Paraguay), the Payaguas (a river-people of the Paraguay), the Zamucos (on the northern border of the Chaco), the Yacurures (between the Rio Grande and

number of these various stocks varied from 1,000 in the case of the Payaguas the Pilcomayo), are treated of. The to 40,000 in that of the Chiriguano. On p. 390 a short account of the wars between the natives and the Spaniards is given, with some notice of the labors of the Jesuits and their "reductions." The valor and activity of some of these peoples in their campaigns against the Europeans were remarkable.

Koch (T.) Die Maskoi-Gruppe im Gran Chaco. (Mitth. d. Anthr. Ges. in Wien, 1902, xxxii, 130-148.) Historico-ethnologic and linguistic account of the Maskoi (Machicui) group of the Gran Chaco Indians, under which the author includes the old Maskoi, the Lengua, Angaité Sanapaná, Sapuki, Guana, etc. Pages 142-148 are occupied by words and phrases in the various Maskoi languages, with explanatory notes, among them the numerals 1-5 and a few proper names and names of places, lists of plant and animal names, etc. A map after Boggiani accompanies the article.

Lasley (Mary). Sac and Fox tales. (J. Amer. Folk-Lore, Boston, 1902, xv, 170-178.) Notes on the sacred pipe and its ceremonial; fasting and tales connected therewith. Also English tests of: A story about a 'possum (Uncle Remus'), story of a boy who killed a 'coon, the chief's daughter and the orphan, the Indian who crossed the ocean, the story of the twins. Mrs Lasley is a daughter of Black Hawk.

Lawson (P. V.) Clam eaters and their shell-heaps in Winnebago county. (Wisconsin Archeol., Milwaukee, 1902, ii, 6-8.) Brief accounts of shell-heaps on the shores of lakes Winneconne, Little Butte des Morts, Mud, etc. These heaps are large and numerous (eighteen on one piece of property) and have yielded many implements of bone, flint, copper, ivory, etc., besides potsherds.

— Ancient cairns and stone circles in Winnebago county. (Ibid., 28-30.) Describes stone heaps on eastern shore of Lake Winneconne, near Menasha, near Fox river, etc. Some of these heaps may have been the result of clearing the ground for agricultural purposes, but the author has been "unable to find

any historical evidence that might indicate that the Wisconsin Indians ever took the trouble to clear the soil of rocks."

— Primitive ceramic art in Wisconsin. (Amer. Antiq., Chicago, 1902, xxiv, 157-168.) Treats with figures, of potsherds, color of antique pottery, black quartz, tempering, shale or shell, porosity, glazing, firing, kneading, conventional decoration, textile fabric decoration, relation of tempering matter to decoration, makers of the local pottery, division of labor, etc. According to the author, the clay and tempering show that most of the Wisconsin pottery was not made in the state, or by the historical Indian, a rather hazardous opinion.

Lolorias (J. M.) As an Indian sees it. (So. Workman, Hampton, Va., 1902, xxxi, 476-480.) Reflections of a Pa-pago on education, civilization, etc.

Meeker (L. L.) [Siouan conjurer's hoop and sticks.] (Bull. Free Mus. Sci. and Art., Phila., 1902, iii, 251-253.) Brief description, with figures, of the hoop and sticks used by Siouan conjurers.

Mooney (J.) Die Tonkaways, der letzet Kannibalenstamm in den Vereinigten Staaten. (Globus, Brnschw., 1902, LXXXII, 76-79.) Brief historical and ethnographical sketch of the Tonkaways, who as recently as fifty years ago seem to have indulged in cannibalism,—they were formerly much noted in this respect. Reduced by white and Indian foes from their ancient strength, the Tonkaways numbered in 1898 only 53 (but 13 of whom were warriors), and their complete extinction is not far away. The article is accompanied by 4 illustrations of Tonkaway men and women.

Moorehead (W. K.) Stone effigies from the southwest. (Rec. of Past, Washington, 1902, 1, 246-250.) Discusses, with 12 figures, stone effigies from the Salado valley in Arizona, most of them representing animals, owl, turtle, Gila monster, etc.; others, less clearly, the turtle, armadillo (?), etc. The author styles one an "effigy mortar." A double grooved hammer of sandstone and some mano stones more or less rudely fashioned are also described. The author asserts that

the ruins in the Salado valley "contain no end of strange, 'unknown' forms in stone and shell."

Netolitzky (F.) Einige Beobachtungen von der Westküste Süd-Américas. (Verh. d. Berl. Ges. f. Anthr., 1902, 196-197.) Brief notes on the disappearance of the Indian canoes in the Smyth Canal region, the mummies of Arica, the burial-places of Pisagua, the archeological finds of Tambo de Mora, etc.

Peet (S. D.) The ruined cities of Asia and America. (Amer. Antiq., Chicago, 1902, xxiv, 135-156.) General discussion with many illustrations.

Porter (R. L.) Aboriginal monuments at Mukwonago in Waukesha county. (Wisconsin Archeol., Milwaukee, 1902, ii, 8-13.) Describes, with plan, six groups of earth-mounds (26 in all) at Mukwonago, once "the Pottawatomie capital." The author considers that they "all belong to one system, and were the burial-places of a more or less extensive aboriginal settlement once located here."

Porter (R. S.) The story of Bantugan. (J. Amer. Folk-Lore, Boston, 1902, xv, 143-161.) The first translation of the legend of Bantugan, the national hero of the Moros of Mindanao, made at Cottabato, in 1900, by Major Porter. The story deals with the adventures of Bantugan and his friend, Datto Banningan, and treats of the Spanish occupancy of Mindanao. Bantugan and his warriors dwell still deep within the mountains of Bongos, an island off the mouth of the Rio Grande de Mindanao, and his wife and her servants in the mountains of the island of Timaco. Every child almost knows this story by heart.

— The story of Datto Pata Mata. (Ibid., 162-164.) Tale of the woman-stealing chief "Four-Eyes" and how he was got rid of by being enclosed in a ball house and floated out to sea.

Preuss (T.) Die alten Ansiedelungen von Chaculá, Guatemala. (Globus, Brnschw., 1902, LXXXI, 346-350.) Résumés, with 4 figures, the data in Seler's *Die alten Ansiedelungen von Chaculá* (Berlin, 1901).

Santa Cruz (J.) Los Italianos en la conquista de Chile. (An. de la Univ., Santiago de Chile, 1901, LIX, 437-460.) Brief notes on the Italians in the history of Chile. In the sixteenth and seventeenth centuries they "occupied the most prominent places in the army, in society, in the church and the cabildos." The "Hercules of the conquest," celebrated by de Ercilla in his epic, was an Italian, Juan Andrea of Naples. Other noted Italians were Pastene, Justiniani, Vicencio Pascual. The population of Santiago has a considerable strain of Italian blood. New Italian elements are rare in Chile since the seventeenth century.

Putnam (F. W.) Archaeological and ethnological research in the United States. (Proc. Amer. Antiq. Soc., Worcester, Mass., 1901 [1902], XIV, 461-470.) Summary of research during 1902 by societies, museums, universities, journals, etc.

Schmidt (M.) Reiseskizzen aus Zentralbrasilien. (Globus, Brnschw., 1902, LXXXII, 29-31, 44-46, 95-98.) The author, who spent the latter part of 1901 among the Indian tribes of the Matto Grosso, discusses the Bakairi of the Rio Novo, Brazilian festivals and dances, in Rosario, the Bakairi village on the Paranatinga, canoe-building on the Kulisehu, the Bakairi of the Kulisehu, trade and commerce on the Kulisehu, the Auetöi Indians, the Guatos, etc. Of the Guatos not more than 100 individuals (Schmidt met 46) survive; their life and ideals are simple and monotonous, and they are much given to the drinking of *tsit'a*, made from the juice of the Akuri palm. Auetöis (some 100 in number), belong to the Tupi stock and are fond of songs and dancing (text of a war-song, p. 96). On p. 95 some interesting items respecting primitive bartering are recorded. The Bakairi of the Kulisehu were very friendly to the explorers, and the author witnessed among them the curing a sick chief by the shaman and *défrichement* of a piece of forest-land (text and translation of one of the accompanying songs, p. 45), the latter a noteworthy movement in aboriginal life. The Rio Novo Bakairi speak Portuguese, to a large extent, besides their native tongue. Since the Paranatinga Bakairi have left the Xingü,

they have prospered and now present "the rare case of a contact between Europeans and Indians, in which the latter have increased their field."

— Die Guató. (Verh. d. Berliner Ges. f. Anthr., 1902, 77-89.) Brief ethnographic account of the Guató Indians of the Matto Grosso, visited by the author in 1901. Location, life, canoes, houses and house-furniture, agriculture, food, cooking, pestles, water-vessels, preparation of Akuri-liquor, dress, ornaments (very rare), weapons (lance and spear in particular), fish-club, basketry, physical characteristics, diseases, intellectual life, tree-drawings, songs, trade, work, chiefs and civil life, marriage, terms of relationship, property and language are touched on. The Guató boil their food and the men are the cooks. Beards are common. No trace of tattooing, body painting, etc., was found. The "intellectual indolence" of the Guató is marked. They denied possessing any legends. Individual property exists and the property of children is recognized and respected. A very large part of the words in the language begin with the prefix *ma-*. Special numerals up to four are used—those from five to ten contain the word "hand," from eleven to twenty, the word "foot."

Von den Steinen (K.) Urne von Maracá. (Ibid., 196.) The presence of Venetian beads affixed with resin to the arm of a Maracá urn (in form of a girl) indicates that the manufacture of these objects had not ceased with the historical period.

Swan (A. M.) Stone circles. (Amer. Antiq., Chicago, 1902, XXIV, 182.) Brief notes on the stone circles of Socorro and Cochiti, New Mexico, which are described as "similar in many respects to those found in England."

Upham (W.) Man in Kansas during the Iowan stage of the glacial period. (Science, N. Y., 1902, N. S., XVI, 355-56.) Brief statement of observations and conclusions based on a visit, on August 9, 1902, to the place of discovery of the "Lansing man." The remains are assigned by the author to the "Iowan stage of the glacial period." See Williston (S. W.).

— Man in the ice age at Lansing, Kansas, and Little Falls, Minnesota. (Amer.

Geol., Minneapolis, Minn., 1902, xxx, 135-150.) Gives, with 2 plates, account of discovery of Lansing skeleton and the geological conditions under which it was found, also of the evidence as to the existence of man from the glacial gravels of Little Falls, Minn. The Lansing skeleton "affords probably our oldest proof of man's presence on this continent."

— The fossil man of Lansing, Kansas. (Rec. of Past, Washington, 1902, 1, 274-275.) Résumés, with 3 illustrations, facts in preceding article.

V. Einen Runenurkunde über die Normannenfahrt nach Nordamerika im Jahre 1050. (Globus, Brnschw., 1902, lxxxI, 304-305.) Brief account of a rune-stone from the Viking station of Ringerike in southern Norway, discovered in 1817, then lost and found

again. According to Professor Bugge the inscription relates to a voyage of the Norsemen to America in 1050.

Wickersham (J.) Contact between Asia and America. (Amer. Antiq., Chicago, 1902, xxiv, 185.) Note on the possibility of passage from Asia to America by the natives of the Arctic regions.

Williston (S. W.) A fossil man from Kansas. (Science, N. Y., 1902, N. S., xvi, 195-196.) Brief account of a human skeleton found under 20 feet of the Missouri valley drift near Lansing, in February, 1902.

Yates (L. G.) Prehistoric California. (Bull. South. Calif. Acad. Sci., Los Angeles, 1902, 1, 81-86.) This first part of a general résumé treats of topography.

ANTHROPOLOGIC MISCELLANEA

Was Willow Bark Smoked by Indians? — A large number of travelers in North America, who have made observations among the Indians during the last three centuries, have told us that the aborigines smoked the bark of red willow, either mixed with tobacco or as a substitute for it. If authority were of any value, we have enough of it to decide this question definitely and forever, yet I seriously doubt if any of our Indians smoked willow bark. They used so many articles in addition to tobacco that it is rather hazardous to say that willow was never used, but this much I may aver: that it did not supply the bark they usually smoked and that it was not, as many have told us, the ordinary source of the well-known *kinnikinnik*.

Here is a sample of the statements we find in the works of travelers and ethnographers. The famous George Catlin, describing in 1832 the dress of the Mandan chief Four Bears, says: "His *tobacco-sack* was made of the skin of an otter, and tastefully garnished with quills of the porcupine, in it was carried his *k'nick-k'neck* (the bark of the red willow which is smoked as a substitute for tobacco)." ¹

Now, of this particular tribe, the Mandans, in whose vicinity I lived nearly eight years, I can positively assert that they did not smoke willow bark and that their *kinnikinnik* was obtained chiefly from *Cornus sericea*, or silky cornel, a species of dogwood. This I believe to be true of all Indians to whom travelers have ascribed the habit of smoking willow bark.

When first I went among wild Indians (in 1865), I went with the idea, gained from reading and conversation, that they smoked willow bark. Traders and others, who had lived years among them, told me so. Had I remained but a few months in the Indian country, or had I lived there many years and known nothing of botany, I might have come away and added one more to the witnesses in favor of willow bark.

In 1865, at old Fort Union, near the mouth of the Yellowstone, I saw an Assiniboin bringing in from the woods a handful of red twigs. On asking an old resident what they were, I was informed that the Indian

¹*North American Indians*, London, 1866, vol. 1, p. 147.

carried red willow, the bark of which he used in smoking. I examined one of the twigs and was surprised to see that it was not willow. Although the foliage had been all removed, it was evident from the remaining scars that the shrub, unlike the willow, had opposite leaves. For the consideration of a cup of sugar, which in those days was a standard of value on the upper Missouri among tribes that knew nothing of our money, I induced the Assiniboin to take me to the woods and show me the shrub from which he had cut his twigs. He led me in a few minutes to a bush, which I saw at once was *Cornus sericea*, for I had become well acquainted with the species years before on botanical rambles in the forests of the upper Mississippi. I subsequently investigated the subject among other tribes east of the Sierras and always with the same result.

Although travelers and ethnologists are far astray in this matter, the botanists seem to labor under no delusion. In that standard work, Gray's *Manual of Botany of the Northern United States*, we find that the author gives "kinnikinnik" as one of the trivial names of *Cornus sericea*; but he gives no such name to any of the willows.

I have sometimes, but rarely, seen *Cornus stolonifera*, a shrub closely resembling *C. sericea*, culled for kinnikinnik. Dr Gray makes some concession to popular ignorance by giving "red osier" as a trivial name for this species. But osier here must be regarded as a misnomer.

It cannot be denied that these two species of dogwood bear some resemblance to red-barked willow, particularly in the winter, when the leaves have fallen.

I once saw in manuscript an essay by a physician in which he maintained that the freedom from malaria, enjoyed by the Indians of the upper Missouri, was to be attributed to the salicin contained in the willow bark which they smoked.

As I have seen works, by learned scholars, quite recently published, in which this error about willow bark is repeated, I think I should not longer delay in calling special attention to it.

WASHINGTON MATTHEWS.

Klikitat Baskets. — I have been looking over several large collections of coiled and imbricated baskets from the upper Columbia and the Fraser river drainage. These have been called "Klikitats" by collectors; they differ, however, in many respects. First, the foundation of the coil in the genuine Klikitat and many of the Selish baskets is somewhat cylindrical in form, but many beautiful specimens from about the mouth of Fraser river and Sechelt inlet have a flat strip of wood for the foundation, often as much as three-fourths of an inch in width. Between

these two extremes there are any number of intermediate forms ; but the most beautiful examples are flat and glossy on the outside, because of a thin narrow strip of foundation. Secondly, in the sewing there are differences with reference to the systematic splitting of the stitches underneath by the passing stitch, giving a bifurcated effect. In others, slovenly sewing will produce a careless example of the same bifurcation ; but in still others the sewing is done carefully so as to avoid this splitting of the stitch underneath. Thirdly, in genuine Klikitat the bottom is a regular flat coil ; the first turn does not extend to the limit of the bottom ; but in other examples, especially those that have a wide foundation, the sewing is back and forward and across in perfectly straight lines, as in plowing a field. Fourthly, in the old patterns the bottom rests on the ground, but in others an additional hoop or ring of some kind is sewed on, making a sort of stand, as in a dish or tea-cup. Fifthly, the imbrication on some examples covers only the upper part of the body ; the lower part is plain. In others various designs are formed in black, brown, and grass color, and completely cover the body. Sixthly, there is an interesting group of these baskets in which the ornamentation is not imbricated at all, but runs along over and under the stitches after the manner of what is called "beading" in lace work. Practically this beading is the widely distributed "overlaying" on the plain wood of the foundation with colored straw or black, but in these examples it passes over and under so as to create attractive damask patterns.

In trying to find an exact location, ethnic and geographic, for these many varieties, it turns out that the old-fashioned truncated pyramid, round at the corners in close and beautiful workmanship, is found all the way from the headwaters of the Fraser and Thompson to the Strait. In addition to these, the forms differing from the fundamental vary more and more as the river mouth is approached, where the band-boxes and packing-cases of the most recent form take the place of the old-fashioned cooking-basket.

I write this note, not so much to state these facts, as to show my own embarrassment. If any reader of the *Anthropologist* can tell me how to classify the collection of imbricated ware in the National Museum, giving the proper location, tribe, and name to each of the varieties here described, I shall be extremely grateful.

O. T. MASON.

An Algonquian Loan-word in Siouan. — In the vocabulary of the "O-maw-haw Language," given on page lxxxi of "Astronomical and Meteorological Records, and Vocabularies of Indian Languages, taken on the Expedition for Exploring the Mississippi and its Western Waters,

under the Command of Major S. H. Long, of the United States' Topographical Engineers, in 1819 and 1820" (Philadelphia, 1822), which is bound up with the second volume of Edwin James' account of Long's "Expedition from Pittsburgh to the Rocky Mountains" (Philadelphia, 1823), there is the following entry: British, *suk-an-ash*, — not a proper Omawhaw word." In the Oto vocabulary on page lxxx we also find: "British, *ra-gar-rash-ing*, probably not an Oto word." The Omaha *sakanash* and the Oto *ragarrashing* here recorded are, as Long suspected, loan-words, and their source is from some of the Algonquian dialects. They both belong evidently to the same family as the Ojibwa *shaganosh*, "Englishman," and the cognate words in other closely related Algonquian tongues, which, according to most authorities, are corruptions of the French *anglais* — or, better, perhaps, of *les anglais*. In a French-Mississauga manuscript in the Toronto Public Library, dating ca. 1801, the word for *anglais* is given as *zaganassa*; the vocabularies in the sixth volume (1800) of the Collections of the Massachusetts Historical Society record for "English": Mountaineer *agaleshou*, Micmac *agalshecau*. In modern Nipissing the word for "Englishman" is *aganeca*, concerning which Cuoq, in his "Lexique Algonquin," p. 16, remarks: "Ce mot *aganeca* [*aganesha*], n'est autre chose que notre mot *anglais* algonquinisé; on disait autrefois, *angaleca*, les Sautaux disent, *caganac* [*shaganash*], les Otawas *saganac* [*saganash*], les Cris *akaias*, les Abénaquis *anglis* d'où est sorti le mot *yankees*." It is interesting to find that this Algonquian loan-word from French became a loan-word itself in Siouan, either directly or through *métis* influence.

A. F. CHAMBERLAIN.

Mary Louise Duncan Putnam, of Davenport, Iowa, died February 20th in her seventy-first year. Mrs Putnam was born at Greencastle, Pennsylvania, September 23, 1832, and soon after her marriage in 1854 to Charles E. Putnam, of Saratoga, New York, moved to Davenport, where she thenceforward continuously resided. Of the many public and private enterprises in which Mrs Putnam manifested deep interest, that of particular moment to students of science was the Davenport Academy of Sciences, of which she was the first woman to become a member, and of which her son, Joseph D. Putnam, was secretary when only fifteen years of age. On the death of young Putnam in his twenty-sixth year, his mother's interest, already awakened through his devotion to the Academy and love for his chosen field of scientific work, became enthusiastic, and henceforth the Academy found in Mrs Putnam an active and loyal supporter in its every undertaking. Through her generosity the

"Putnam Publication Fund" was established, through which the Academy has been enabled to continue the publication of its important series of *Proceedings*. She was instrumental also in acquiring additional land as well as in obtaining possession of the church building which now forms Science Hall of the Academy, and in the appointment of a permanent curator. Much of the work performed by the Academy in recent years has been due to Mrs Putnam's devotion to its interests and to her broad liberality.

By the terms of Mrs Putnam's will, and the relinquishment on the part of her children of their share in her estate, the Davenport Academy becomes possessed of an endowment fund of about \$24,000, which will insure the permanent continuance of its important work. At the time of her death Mrs Putnam was president of the Academy and a fellow of the A. A. S.

F. W. H.

Wisconsin Archeological Survey.—A bill "to provide for the survey and preservation of the Indian mounds of the state of Wisconsin, and providing an appropriation therefor," was introduced in the Wisconsin legislature on February 11. The bill contemplates an appropriation of \$2500 per annum for the prosecution of an archeological survey of the state, as well as for the "exploration and preservation of such mounds as are commonly known as Indian mounds," especially those in danger of demolition. The money is to be expended by the commissioners of the Geological and Natural History Survey of the state, who are authorized to appoint a director and the necessary assistants. Special reports are to be submitted by the director from time to time. It is greatly to be hoped that the bill may soon be enacted into law. The encroachment of agricultural operations, the effect of the elements, and the ever-present vandal all tend to the destruction of many of these relics of a passing race, and unless steps looking to their survey and preservation are taken in the near future, the opportunity will be forever lost. It seems eminently fitting that the state of Wisconsin, which has been such a liberal patron of science and history, and which is so rich in archeological remains, should take the initiative in this matter.

Dr Alfredo Chavero.—By his recent appointment as Director of the Museo Nacional, of Mexico, Dr Chavero merits the congratulations of the many friends which he made in the United States during the thirteenth session of the International Congress of Americanists, held at New York in October, to which he was a delegate from the sister Republic. Owing to Dr Chavero's reputation as an archeologist and historian, his high standing as a statesman, and his many fine personal qualities, no better selection for

the directorship of such an important institution could have been made. Dr Chavero's works have been long and favorably known to Americanists, while his poetic nature is reflected in several dramas based on episodes in the early history of his country. He has been a member of congress since 1869, and his influence as well as his appreciation of justice was characteristically shown when, in 1879, he suspended President Diaz from the privileges of the Masonic fraternity, of which Dr Chavero was a prominent officer, by reason of the attitude of the former in the execution of nine citizens of Vera Cruz who had been suspected of conspiracy. He was elected senator in 1886, and for years has been an ardent supporter of the President in the promotion of the welfare of the nation. Dr Francisco Rodriguez has been appointed Sub-director of the Museum.

F. W. H.

A Doll Exhibition. — An international exhibition of dolls and puppets will be held at Liège, Belgium, from May 21st to June 14th next, on the occasion of the tenth anniversary of Les Amis du Vieux Liège. The exhibition will be held in the hall of the Société Libre d'Émulation, under the auspices of a committee consisting of many prominent anthropologists, folklorists, and other savants of Europe. The prospectus announces that the exhibition will comprise dolls both ancient and modern, native and foreign, rich and poor, solid and stuffed, animate and inanimate, as well as beds, carriages, clothing and other doll paraphernalia, books, photographs, engravings, and in fact everything pertaining to dolls, puppets, and marionnettes. The cost of transportation of exhibits will be borne by the committee. M. Ch. J. Comhaire, 13 rue St-Hubert, Liège, Belgium, will cheerfully afford full information. Exhibits should be addressed to M. Louis Raskin and marked "Pour l'Exposition de Poupées de Liège."

International Congress of Americanists. — The thirteenth annual session of the International Congress of Americanists was held at the American Museum of Natural History, New York, October 20-25, 1902. The meeting was very successful from both a scientific and a social point of view. Delegates from foreign governments and others representing the museums, learned and scientific societies, universities, etc., were in attendance. Some 95 papers, covering all aspects of the study of the American aborigines, were read or offered to the Congress, and many interesting discussions took place. The next session of the Congress will be held at Stuttgart, Germany, in 1904. An extended account of the proceedings by the writer of this note will be found in *Science* (N. Y.), 1902, N. S., xvi, 884-898.

A. F. C.

Gustav Brühl. — We regret to record the recent death of Dr Gustav Brühl, of Cincinnati. Dr Brühl was the author of *Die Culturvölker Alt-Amerika's* (New York, Cincinnati, and St Louis, 1875-1887) and of *Zwischen Alaska und Fierland* (Berlin, 1896), as well as of many brief papers published principally in anthropological and geographical journals. Among the latter are *The Ruins of Iximche*; *Aztlan-chiromotzoc, Eine ethnologische Studie*; and *Pre-columbian Syphilis in the Western Hemisphere*. Dr Brühl was a founder of the American Anthropological Association, and was in attendance at the meeting of the International Congress of Americanists in October last.

Sugar-making in Sumatra. — In the district of Simalur, on the west coast of Sumatra, the juice is extracted from sugar-cane, usually, by rolling a heavy log backward and forward over the cane. But Dr W. L. Abbott figures another form in which a latch-shape piece of wood is suspended; the cane is passed over the perpendicular face of the latch on which works freely a lever, whose pointed end is inserted just above; the cane is pushed back and forward between these two surfaces and the juice being extracted falls in a dish underneath. O. T. MASON.

Dr Jacopo Danielli, docent in anthropology at the Istituto di Studi Superiori, Florence, whose death occurred April 19, 1901, had since the death of his father devoted much of his attention to the management of the industrial establishment which fell into his hands. Dr Danielli had published studies on the crania of the natives of Nias and on the anatomy of the people of the island of Engano, and left uncompleted a more extensive work on the morphology of the teeth in man. A. F. C.

A RICH COLLECTION of Babylonian antiquities has been presented by the Sultan of Turkey to Professor H. V. Hilprecht, head of the Department of Archeology of the University of Pennsylvania, in recognition of the services rendered by him to the Imperial Museum at Constantinople, and have now been deposited in the University Museum. Professor Hilprecht has been awarded the Lucy Wharton Drexel medal of the University of Pennsylvania for his archeological researches.

THE NEW BUILDING of the Department of Archeology of Phillips Academy, Andover, Massachusetts, was opened with appropriate exercises on Saturday, March 28. This department of the Academy, to which attention has already been called in these pages, is meeting with great success under the honorary directorship of Dr Charles Peabody and the curatorship of Mr Warren K. Moorehead.

THE DUC DE LOUBAT, already the most liberal patron of anthropological research, has given \$100,000 to Columbia University for the estab-

lishment of a Chair of American Archeology. Mr Marshall H. Saville, curator of Mexican archeology in the American Museum of Natural History, has been elected to the professorship.

THE DEPARTMENTS of anthropology, philosophy, and psychology of Columbia University have been grouped to form one of the newly organized divisions of the University. Of this "Division of Philosophy, Psychology, and Anthropology" Prof. J. McK. Cattell is chairman, and Dr Adam Leroy Jones secretary.

ORIENTAL PRIZE OF THE ACADEMY. — The Académie des Inscriptions et Belles-Lettres de l'Institut de France has awarded the Delalande-Guérineau prize for the promotion of Oriental studies to M. Victor Chauvin, professor of Oriental Literature at the University of Liège, Belgium, for the first volume of his *Bibliographie arabe*.

PRIZES OF THE SOCIÉTÉ D'ANTHROPOLOGIE DE PARIS. — The Broca prize (1500 francs) has been awarded to Dr Paul Gaudin for his *Anthropométrie à l'âge de la puberté*, and the Fauvelle prize (2000 francs) to Jules Soury for his *Le système nerveux central*.

SALOMON REINACH, one of the collaborators of *L'Anthropologie* and an archeologist of note, has been appointed curator of the Museum of National Antiquities at St-Germain-en-Laye, in succession to Alexandre Bertrand.

AT THE ANNUAL MEETING of the American Oriental Society, recently held at Baltimore, a committee was appointed to memorialize Congress for an extensive geographical, geological, and ethnographical survey of the Philippine islands.

PROF. F. W. PUTNAM, curator of the Peabody Museum of Harvard University, has been awarded the Lucy Wharton Drexel medal of the Franklin Institute of Philadelphia for distinguished work in American archeology.

THE PUBLICATION OF THE "POLITISCH-ANTHROPOLOGISCHE REVUE, Monatschrift für das Soziale und Geistige Leben der Völker," was begun some months ago under the editorship of Ludwig Woltmann and Hans K. E. Buhmann of Leipzig.

DR LIVINGSTON FARRAND, of Columbia University, has been appointed an assistant curator in the Department of Ethnology of the American Museum of Natural History, New York.

DR ALOIS HRDLICKA has been appointed Assistant Curator of Physical Anthropology in the National Museum.

THE AMERICAN ANTHROPOLOGICAL ASSOCIATION

ANTECEDENT CONDITIONS

The project of uniting American anthropologists in an organization of national character has been broached repeatedly. The subject was considered with especial care in 1896, largely through the influence of the late Dr D. G. Brinton. During this year a committee of the American Association for the Advancement of Science, on the recommendation of the Section of Anthropology, was appointed to undertake an "ethnological investigation of the white race in America;"¹ about the same time there was a decided renewal of local activity, especially in the Anthropological Society of Washington, and during the Christmas holidays of the same year the nucleus of a national organization of anthropologists was formed at a meeting held in New York under the designation of an "Informal Conference" of the members of the Section of Anthropology of the A. A. A. S., which, although not specifically authorized by the Association, was arranged by the Sectional Committee with the approval of the President and the Permanent Secretary.² This meeting represented a compromise between those anthropologists favoring a national organization and those who apprehended that such a movement might divert interest and support from the American Association for the Advancement of Science, then as now the leading general organization of American students of science. The compromise was the more readily accepted as a temporary arrangement, since other special organizations of national character — notably the Geological Society of America and the American Chemical Society — were still in the experimental stage of relationship to the parent association, and it seemed clear that their experience would soon determine the feasibility of maintaining national organizations or specialists in affiliation with, though not organically related to, the original body. At the Detroit meeting of the A. A. A. S., formal authority was given for holding a winter meeting of the Section of Anthropology at Ithaca during the Christmas holidays of 1897; and the winter meet-

¹ *Proceedings of the A. A. A. S.*, Buffalo meeting (1896), p. 251.

² The report of this meeting appears in the *Proceedings of the A. A. A. S.*, Detroit meeting (1897), p. 391.]

ings were thenceforward kept up regularly, the latest being that held in Chicago during the Convocation Week of 1901-'02.

As time passed it was found that, while the winter meetings fairly met the needs of working anthropologists for assembling and for the reading and discussion of papers, the need for a medium of publication remained, and was indeed increased by the meetings. Accordingly the project of formal organization recurred in 1898, and was discussed at length by Brinton, McGee, Boas, Putnam, Baker, Hodge, Powell, Holmes, Dorsey, Culin, and several other anthropologists. The opinion still prevailed that the time was hardly ripe for national organization; but the sentiment in favor of such organization was so strong that another temporary substitute was adopted, *i. e.*, it was arranged to undertake the publication of a national journal devoted to anthropology. Pursuant to that arrangement the Anthropological Society of Washington, of which the *American Anthropologist* had for some years been the organ, discontinued the journal and surrendered its name; and the issue of a new journal of national character under the designation *American Anthropologist, New Series*, was begun in January, 1899. It was conducted by an editorial board representing all sections of the United States and Canada, with two constructive owners — whose chief function it was to assume responsibility for deficits in the embryo stages of the venture. The publication has since been maintained on a satisfactory basis, save that the circulation, both domestic and foreign, is less extensive than would be desirable.

While the winter meetings of the Anthropological Section of the A. A. S. and the pages of the *American Anthropologist* met certain needs of working anthropologists, the feeling still remained that the dignity and importance of the science, as well as the convenience of its devotees, demanded a definite national organization; this feeling was strengthened by the revival of the American Ethnological Society and notable advances in anthropological work in New York and elsewhere; and the project of forming a national organization was broached anew at nearly every assemblage of anthropologists from different sections of the country. Meantime, the examples of the Geological Society of America, the American Chemical Society, and other organizations affiliated with the A. A. S., and the career of the American Society of Naturalists with its affiliated societies, had shown that the founding of special societies tends rather to strengthen than to weaken the central scientific body, and serves to foster and stimulate general scientific progress as well as to promote the special sciences.

PREPARATORY MOVEMENTS

Definite steps toward organization were finally taken during the autumn of 1901. Pursuant to correspondence and a conference between McGee and Boas, the Anthropological Society of Washington, on November 19, adopted the following resolutions (referring to the prospective meeting of an Anthropological Section of the A. A. A. S. and other organizations in Chicago during the ensuing Convocation Week) :

"RESOLVED, That the Anthropological Society of Washington send a delegation to this meeting, and instruct such delegation to represent the Society more especially in discussions relating to coöperation among American anthropologists ; and

"RESOLVED, That the American Ethnological Society be advised of this action on the part of the Anthropological Society of Washington."

Notice of this action was duly communicated to the officers of the American Ethnological Society in New York ; and corresponding action was taken by that body. The Washington delegation comprised W J McGee (Chairman), J. Walter Fewkes, D. S. Lamb, Alice C. Fletcher, and Walter Hough ; though the two last named were unexpectedly prevented from attending the Chicago meeting, while Dr Lamb, although in Chicago, was unable to participate in the joint conference. The New York delegation comprised Franz Boas (Chairman), Livingston Farrand, and George Grant MacCurdy. Early in the meeting at Chicago the Anthropological Section of the A. A. A. S. appointed as a committee to confer with these delegations Stewart Culin, George A. Dorsey, Frank Russell, Roland B. Dixon, and Frederick Starr. These five, with the three members of the New York delegation and the first two named of the Washington delegation, met informally in the office of the Curator of Anthropology in the Field Columbian Museum, Dr McGee acting as chairman and Dr Dorsey as secretary. The deliberations covered a wide range, most of the discussions relating to ways and means of strengthening the *American Anthropologist* ; the general feeling was in favor of a better organization among American workers in anthropology, but the necessity for adjournment prevented definite formulation of plans. Other demands on the time of the conferees stood in the way of another session, but the subject was pursued in casual meetings among members of the group, and subsequently through correspondence.

On January 21, after conferences with Boas, Fewkes, and Culin, McGee circulated among the conferees a letter accompanied by a "Rough Draft of Constitution ;" on January 25 Boas circulated a letter with an alternative form of constitution ; and within a few weeks all of the con-

ferrees had expressed themselves concerning the desirability of proceeding toward organization and concerning the form the organization should assume. All were more or less heartily in favor of organizing, though there were differences of opinion as to the mode of procedure and the basis of organization, and also as to the urgency of the need; Boas and some others favored a technical society organically united with the A. A. S., while McGee and Dorsey advocated a general association connected with the A. A. S. only through comity, and one or two of the conferees were of opinion that the anthropological section of the older organization might advantageously be absorbed. Subsequent correspondence served to remove some differences of opinion and to define others; a few anthropologists not of the Chicago conferees were consulted, notably Putnam and Cattell in New York, and Holmes and Miss Fletcher in Washington; and on February 20 a "Provisional Constitution," drafted chiefly by McGee in accordance with what seemed to be the prevailing sentiment, was put in circulation. This was, in due course, accepted by six of the ten conferees (one being inaccessible); three of the conferees withheld acceptance pending further consideration.

The majority of the conferees favoring early organization, questions as to time and place, and also as to incorporation, were discussed in chance meetings and to some extent in correspondence. The prevailing sentiments were for Pittsburg as the place and the date for the next ensuing meeting of the A. A. S. as the time for final organization, and for incorporation under the laws of Pennsylvania. Later investigation (chiefly by McGuire) showing that incorporation under the laws of Pennsylvania would be impracticable in view of the limited number of anthropologists residing in that state, several of the conferees expressed a preference for incorporating in the District of Columbia, where the laws governing corporations are well adapted to the needs of national organizations; and on March 24, two of the conferees resident in other cities chancing to be in Washington, an Act of Incorporation was executed and filed — a local anthropologist (J. D. McGuire) not included in the conferees being invited to join in the act to meet legal requirements. The instrument is as follows:

THE AMERICAN ANTHROPOLOGIC[AL]	} Recorded March 26, A.D. 1902.
ASSOCIATION.	
	10.20 A.M.

City of Washington, INCORPORATION.
District of Columbia.

We, the undersigned, Stewart Culin of Philadelphia, George A. Dorsey of Chicago, J. Walter Fewkes of Washington, W J McGee of

Washington, and Joseph D. McGuire of Washington, being persons of full age and citizens of the United States, and a majority being citizens of the District of Columbia, pursuant to and in conformity with sections 599-604 of the code of law for the District of Columbia, enacted by the Senate and House of Representatives of the United States of America in Congress assembled and approved March 3, 1901, hereby associate ourselves together as a body corporate, and certify in writing:

1. That the name of the body corporate is The American Anthropologic[al] Association.
2. That the term for which the Association is organized is perpetual.
3. That the particular business and objects of the Association are, to promote the science of anthropology, to stimulate and coördinate the efforts of American anthropologists, to foster local and other societies devoted to anthropology, to serve as a bond of union among American anthropologists and anthropologic[al] organizations present and prospective, and to publish and encourage the publication of matter pertaining to anthropology; the Association to have power (*a*) to acquire, hold and convey real and other property and to establish general and special funds, (*b*) to hold meetings, (*c*) to conduct, support, or aid anthropologic[al] research, (*d*) to publish and distribute matter pertaining to anthropology, and (*e*) in general to transact any business pertaining to an organization for the promotion of anthropology.
4. That the affairs, funds, and property of the Association shall be in general charge of a board of managers whose number for the first year shall be thirty-two, all of whom shall be elected from among the members of the Association.

Witness our hands and seals this twenty-fourth day of March, 1902.

JNO. D. MCCHESENEY
[*Witness*]

STEWART CULIN (Seal)
GEORGE A. DORSEY (Seal)
J. WALTER FEWKES (Seal)
W J MCGEE (Seal)
JOSEPH D. MCGUIRE (Seal)

Personally appeared before me this twenty-fourth day of March, 1902, Stewart Culin, George A. Dorsey, J. Walter Fewkes, W J McGee, and Joseph D. McGuire, all of whom signed the foregoing Act of Incorporation in my presence, and acknowledged the same in due form of law to be their act and deed for the purposes herein stated.

Done in the City of Washington, District of Columbia, this twenty-fourth day of March, 1902.

JOHN D. MCCHESENEY,
Notary Public.

(Recorded on pages 33-34, book 10, Acts of Incorporation, Office of Recorder of Deeds, Washington, D. C.)

After executing the instrument, the four conferees present selected a provisional list of some sixty American anthropologists (out of a check list of eighty-eight names previously compiled by McGee) designed to be

invited to the founding meeting at Pittsburg, together with a provisional list of temporary officers authorized to call the meeting. The lists were the next day submitted by Dorsey to the conferees and a few other anthropologists resident in New York, who found them only in part acceptable. It was there decided (chiefly by Putnam, Boas, and Dorsey, of course with the implicit approval of the absent conferees) to withhold further definitive action pending formal organization ; and a revised list of forty invitees to the founding meeting was adopted. The list is as follows :

Frank Baker	Washington Matthews
David P. Barrows	Otis T. Mason
Franz Boas	George Grant MacCurdy
Charles P. Bowditch	W J McGee
A. F. Chamberlain	Joseph D. McGuire
Stewart Culin	Merton L. Miller
Roland B. Dixon	James Mooney
George A. Dorsey	Warren K. Moorehead
Livingston Farrand	Edward S. Morse
J. Walter Fewkes	W. W. Newell
Alice C. Fletcher	C. L. Owen
Albert S. Gatschet	J. W. Powell
J. N. B. Hewitt	F. W. Putnam
F. W. Hodge	Frank Russell
W. H. Holmes	M. H. Saville
Walter Hough	Harlan I. Smith
Aleš Hrdlička	Frederick Starr
Albert E. Jenks	John R. Swanton
A. L. Kroeber	Cyrus Thomas
Berthold Laufer	E. S. Wood.

During ensuing weeks, discussion proceeded through correspondence and otherwise, the most noteworthy contribution being a paper by Dr Boas, presented before the Anthropological Society of Washington, on April 8, and published in *Science* (vol. xv, pp. 804-809) under the title, "The Foundation of a National Anthropological Society." The provisional constitution was still further modified in the light of the expressions elicited in the course of this discussion ; and on April 28 Dorsey sent to each of the persons named in the list (1) an invitation to take part in founding the prospective association, (2) a copy of the provisional constitution with a request for expression of judgment concerning the policy expressed therein, and (3) a printed copy of Dr Boas' paper. Replies were

received from most of the invitees ; extracts were made from these and circulated in turn, additional replies coming in meantime until all but four or five of the prospective founders had submitted some expression of opinion. The entire correspondence was finally reviewed and summarized, chiefly by Dorsey and McGee ; and the platform of the prospective Association as outlined in the draft of constitution was once more revised with the view of adjusting it to the consensus of opinion. On June 16 Dorsey forwarded to each of the forty prospective founders (1) a formal notice of the founding meeting to be held at Pittsburg, June 30, at 2 p.m., (2) a review of all the replies, and (3) a printed copy of the "Provisional Constitution (or By-laws)." A public notice of the meeting was also inserted (by McGee) in *Science* for June 27 (vol. xv, p. 1035).

At the meeting of the Council of the A. A. A. S. in Hotel Schenley on June 28, it was voted to recognize, for the purposes of the Pittsburg meeting, the American Anthropological Association as an affiliated society entitled to representation by two delegates.

After the first general session of the A. A. A. S. and the organization of the sections at Pittsburg on June 30, but before the hour set for the founding meeting, Messrs Boas, Dorsey, Fewkes, McGee, and Putnam met at the instance of the first named in one of the rooms of the Hotel Schenley, primarily to consider certain changes in the plan of organization which had occurred to Dr Boas and Professor Putnam on reading the printed draft of constitution ; and various further changes in platform (chiefly suggested by Dr Boas) were agreed to as desirable for recommendation to the founders.

PROCEEDINGS OF THE FOUNDING MEETING

Pursuant to the call, the following gentlemen met in Oakland Church, Pittsburg, at 2 o'clock on June 30, 1902 : Messrs Boas, Culin, Dorsey, Fewkes, Hewitt, Holmes, Hough, MacCurdy, McGee, McGuire, Putnam, Saville, and Smith. The meeting was called to order by Culin as Vice-President and Chairman of the Section of Anthropology of the A. A. A. S., and by unanimous request he retained the Chair ; and Dorsey was asked to act as Secretary of the meeting, in view of the fact that he had conducted the greater part of the correspondence.

The call for the meeting was read by the Secretary, after which the proceedings were opened with a motion by Professor Putnam that, in the judgment of the anthropologists present the creation of an association of American anthropologists of national character was desirable ; after some

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discussion as to the necessity of such an expression in view of previous action, the motion was adopted unanimously.

Dr McGee briefly outlined the history of the provisional constitution (or by-laws) calling special attention to the modifications of the printed draft just agreed to by Putnam, Dorsey, Boas, Fewkes, and himself. By unanimous consent he then proceeded to read the draft, article by article and section by section; and each (with the exception of the section fixing dues in the article relating to finances and property) was adopted seriatim, usually after more or less extended discussion. On motion of Dr Boas, and with the understanding that the change should be regarded as conditional on a definite coöperation with the Anthropological Section of the A. A. A. S., which he advocated, it was voted (the Chair giving the casting vote on a tie) to fix the annual dues at \$6, in lieu of \$5 as first contemplated. The entire Constitution (or By-laws) was then adopted by unanimous vote.

On proceeding with organization, a question arose as to the number of Councilors to be chosen under the provisions of Article IV, Section 1; Dr Boas proposed that the number be eight, while Dorsey and McGee explained that it would better accord with previous action to fix the number at twenty-four; and, on vote, the latter number was adopted.

The question of original vacancies being raised, it was unanimously voted that all offices established by the Constitution (or By-laws), including those of the twenty-four Councilors, should be filled during the founding meeting as an essential part of the procedure of organization; also that the close of the terms of officers elected at the meeting shall be reckoned from the opening of the calendar year 1903.

The subject of finances was then considered, and, after extended discussion, it was voted that the dues for the fractional year from July to December, 1902, should be \$3, and should entitle each founder to one copy of the *American Anthropologist* for the corresponding portion of the year.

Professor Holmes then moved that the Association proceed to the election of officers, and the motion was adopted. A question as to form of procedure arising, it was voted, on motion of Dr Fewkes, that the members of the Association present act as a committee to nominate the executive officers; whereupon the following were proposed by *viva voce* nomination:

- | | |
|-----------------------------------|---------------|
| For President, | W J McGee, |
| “ Vice President for four years, | F. W. Putnam, |
| “ Vice President for three years, | Franz Boas, |

For Vice President for two years,	W. H. Holmes,
“ Vice President for one year,	J. W. Powell,
“ Secretary,	George A. Dorsey,
“ Treasurer,	Roland B. Dixon,
“ Editor,	F. W. Hodge.

By unanimous vote the Secretary was instructed to cast the ballot of the meeting for these nominees ; and when this was done the Chairman declared the nominees elected as the original officers of the American Anthropological Association. Thereupon Dr McGee was escorted to the Chair by Professor Putnam.

After *viva voce* nomination and free discussion, the following were nominated as Councilors : Frank Baker, Charles P. Bowditch, A. F. Chamberlain, Stewart Culin, Livingston Farrand, J. Walter Fewkes, Alice C. Fletcher, J. N. B. Hewitt, Walter Hough, Aleš Hrdlička, A. L. Kroeber, George Grant MacCurdy, O. T. Mason, Washington Matthews, J. D. McGuire, James Mooney, W. W. Newell, Frank Russell, M. H. Saville, Harlan I. Smith, Frederick Starr, John R. Swanton, Cyrus Thomas, and E. S. Wood. By unanimous vote the Secretary was instructed to cast the ballot of the meeting for these nominees, whereupon they were declared elected.

On motion of Dr Boas the Association proceeded to select an Executive Committee, in accordance with the provisions of Article VI, Section 1 ; the following were proposed, and on unanimous vote elected by ballot cast by the Secretary : Messrs Boas, Culin, Dixon, Dorsey, Fewkes, Holmes, MacCurdy, McGee, and Putnam. On motion of Professor Holmes, the President was authorized to announce the standing committees at a subsequent meeting.

It was voted to instruct the President to appoint a delegate of the Association to the Congress of Americanists to be held in New York during October, 1902 ; and J. D. McGuire was so appointed. The President was also instructed to designate two delegates to the Council of the A. A. A. S. ; and W. H. Holmes and George A. Dorsey were named as such delegates.

The meeting then adjourned to meet with Section H of the A. A. A. S., but subject to the call of the President to sit at any time during the Pittsburg meeting as sessions of the Council of the Association.

Two meetings of the Council were held pursuant to such calls ; at one the members present signed the revised Constitution (or By-laws) as prepared for the purpose by the Secretary ; and at the other the Secretary was authorized to announce publicly the founding of the Association and to invite the affiliation of American anthropologists.

The first regular meeting of the Association was held in Washington during Convocation Week in affiliation with Section H of the A. A. A. S. An account of the meeting, by Dr George Grant MacCurdy, will be found elsewhere in this issue of the *American Anthropologist*. At a business session on December 30, Dr Boas submitted a draft of Section 3 of Article IX of the Constitution (or By-laws) left incomplete at the founding meeting, and this was unanimously adopted.

CONSTITUTION (OR BY LAWS)¹

ARTICLE I.—*Name.*

The name of this body corporate is the *American Anthropological Association*.

ARTICLE II.—*Objects.*

The objects of the Association are to promote the science of Anthropology ; to stimulate the efforts of American anthropologists ; to coördinate anthropology with other sciences ; to foster local and other societies devoted to Anthropology ; to serve as a bond of union among American anthropologists and American anthropological organizations present and prospective ; and to publish and encourage the publication of matter pertaining to Anthropology.

ARTICLE III.—*Membership.*

SECTION 1. The Association may include four classes of membership, viz., members, life members, honorary members, and patrons.

SEC. 2. Persons interested in Anthropology may be elected on nomination of three members of the Association, and on payment of dues shall become Members of the corporation, with full rights of voting and holding office.

SEC. 3. Any member may become a Life Member on payment of \$100 at one time.

SEC. 4. Persons who have obtained eminence through the promotion of anthropology may be elected as Honorary Members ; they shall be entitled to vote and hold office, shall receive the publications of the Association, and shall be exempt from dues.

SEC. 5. Persons interested in Anthropology who may at one time contribute \$1,000 or more to the Association may be elected as Patrons ; they shall be eligible as Members or Honorary Members, shall receive the publications of the Association, and shall be exempt from dues.

¹ Under the laws of the District of Columbia an act of incorporation is equivalent to a constitution, and the more detailed regulations become by-laws.

SEC. 6. All elections to membership shall be by the Council of the Association.

ARTICLE IV.—*Affiliations.*

The Association may affiliate with other organizations.

ARTICLE V.—*Officers.*

SECTION 1. The officers of the Association shall comprise a President, four Vice-Presidents, a Secretary, a Treasurer, an Editor, and a number of Councilors to be determined annually. These, with the ex-presidents, shall constitute a board of managers to be known as the Council.

SEC. 2. The President, Secretary, Treasurer, and Editor shall be elected annually to serve for one year, or until their successors are elected and installed. One Vice-President and a number of Councilors to be determined by the Council shall be elected annually to serve for four years or until their successors are elected.

SEC. 3. The administration of the Association, including the filling of vacancies, the nomination of officers, and the arrangement of affiliations, shall be entrusted to the Council.

SEC. 4. The President shall preside at the meetings of the Association and of the Council, or may delegate this duty; the President and Secretary shall sign all written contracts and obligations authorized by the Council.

SEC. 5. In the absence or incapacity of the President his duties shall devolve on the Vice-Presidents in the order of their seniority in service.

SEC. 6. The Secretary shall record the proceedings of the Association and of the Council, conduct correspondence, make an annual report, and have general charge of executive matters under the direction of the President or the Council.

SEC. 7. The Treasurer shall have charge of the funds and other property of the Association under regulations fixed by the Council, shall make collections and disbursements, and shall render an annual report; he may be required to give bond; and his accounts shall be audited annually and at such other times as the Council may direct, by a committee of three members of the Association, of whom not more than one shall be a member of the Council.

SEC. 8. The Editor shall act as secretary of the Committee on Publications and perform other duties as directed by the President or Council.

SEC. 9. The officers of the Association shall be elected by majority ballot of the members present at regular annual meetings after open nomination, including the nominations submitted by the Council.

ARTICLE VI. — *Meetings.*

SECTION 1. A regular meeting of the Association and of the Council shall be held annually at the same time and place as the meeting of the American Association for the Advancement of Science ; this shall be the annual meeting for the election of officers and the transaction of general business.

SEC. 2. Special meetings of the Association or of the Council may be held on vote of the Council. Special meetings of the Council may be called by the President with the concurrence of two Vice-Presidents ; and the President shall call a special meeting of the Council at any time and place on the written demand of ten members of the Council.

SEC. 3. Notices of regular meetings shall be published three months in advance, and printed notices of meetings, with preliminary programs of the scientific proceedings, shall be sent to all members at least a week in advance.

SEC. 4. Twenty members shall constitute a quorum of the Association.

ARTICLE VII. — *Committees.*

SECTION 1. The Council shall select annually from its own number an Executive Committee of nine, to whom any business of the Association may be entrusted.

SEC. 2. There shall be standing committees on Program, Finance, and Publication whose chairmen shall be members of the Executive Committee. These committees shall be appointed at the annual meeting by the incoming President, to serve until their successors are designated. The Committee on Publication shall form an editorial board in charge of the publications of the Association.

SEC. 3. All committees of the Association and of the Council shall be designated by the President, except when otherwise provided ; and the President shall be chairman *ex officio* of every committee, except when otherwise provided.

ARTICLE VIII. — *Publications.*

The Association may publish a periodical journal, which shall be sent to all members not in arrears, and to life members, honorary members, and patrons, and may be sold by subscription or otherwise.

ARTICLE IX. — *Finances and Property.*

SECTION 1. The Association may acquire, hold, and convey property, both personal and real.

SEC. 2. The fiscal year of the Society shall begin on the first day of January.

SEC. 3. The annual dues of members shall be \$6.00; for members of the American Association for the Advancement of Science and of the American Folk-Lore Society the annual dues shall be \$5.00; for members of local anthropological societies which receive the *American Anthropologist* the dues shall be \$1.00.

SEC. 4. Annual dues shall be payable in January; members one year in arrears shall not be entitled to vote or to receive the journal, and members two years in arrears shall, after formal notification, be regarded as withdrawn from the Association.

SEC. 5. The income from life membership and such other moneys as may from time to time become available shall be regarded as a permanent fund, which may be invested in the interests of the Association. The income from annual dues, patrons' payments, interest on investments, and other sources may be regarded as a working fund, available for publication and other current expenses; but any surplus of this fund beyond current needs shall be added to the permanent fund.

SEC. 6. No financial obligation in excess of available funds in the treasury shall be assumed by the Council except by authority of a two-thirds' vote of the members present at a regular annual meeting; *provided*, that for the purposes of this section annual dues and subscriptions for the current year may be reckoned as available funds.

ARTICLE X.—*Amendments.*

SECTION 1. Amendments to this Constitution proposed by any three members in writing shall be referred to the Council, and notice thereof shall be given in the announcement of the next meeting; they shall be brought up at this meeting, and if approved by the Council may be adopted by a majority vote of the members present, but if disapproved by the Council shall not be adopted without a two-thirds' vote of the members present.

SEC. 2. Amendments shall go into effect immediately on adoption.

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¹ Members whose names are marked by an asterisk (*) are founders of the Association.

² Vacant through the death of Major J. W. Powell.

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THE MODERN PEQUOTS AND THEIR LANGUAGE

By J. DYNELEY PRINCE AND FRANK G. SPECK

INTRODUCTION. BY FRANK G. SPECK

Comparatively few people are aware that there are still in existence in Connecticut about one hundred Indians of Pequot-Mohegan blood. A colony of some fifty individuals of this group, now mostly employed as farm and factory hands, is still to be found at the village of Mohegan, some miles south of Norwich, Connecticut; the remaining fifty live in adjacent towns and visit their people only occasionally. The land at Mohegan is now owned in severalty, as the reservation went out of title years ago. The Indians are consequently all citizens of the United States and enjoy all the privileges of the courts and schools. A Congregational church is supported by the Indians at Mohegan.

Although these people are really Pequots in language, they nevertheless refer to themselves as Mohegans (*Mûhî'gânîûk*), a discrepancy which seems to have originated in the following manner: An old Pequot tradition tells of the emigration of that tribe in about the year 1600, from upper Hudson river, where they lived as neighbors of those Mohicans who were, as is well known, a branch of the Lenni Lenâpe and who consequently spoke a Delaware dialect. The Munsees of Hagersville, Ontario, and the Delawares of the Cherokee reservation in Indian Territory and of Ottawa, Kansas, are the sole modern representatives of the Lenni Lenâpe.¹ The

¹ So Prince in *American Journal of Philology*, XXI, pp. 295 ff.

cause of this Pequot removal is not very clear, although it may be conjectured that it was probably due to over-population. These people may have been years on their journey from the Hudson river territory eastward, and they no doubt settled in various places in Connecticut while en route. It is evident that as soon as they reached Connecticut river they turned southward, following the west bank, until their course was checked by the waters of Long Island sound. Their final descent on this southern territory must, however, have been abrupt and violent, as it caused the disruption of the Niantics who were then in possession of that region, one branch of whom, being separated from their kinsfolk, was thenceforth known as the Western Niantics. The remainder of the Niantics were probably driven by the Pequots across the Paucatuck, where they continued their tribal existence more or less mixed with the Narragansetts.¹

Not long after these events, Uncas, a Pequot of "royal" blood, started a rebellion against Sassacus, who had become grand sachem of the Pequots after the slaying of his father, Wopigwooit, by the Dutch. Uncas' object, it would appear, was to depose Sassacus and obtain the leadership of the Pequots for himself. Uncas based his claims on his own and his wife's "royal" descent. Sassacus, however, defeated Uncas in a severe battle, and the latter, attended by a few followers, fled to the Narragansetts. Soon afterward he was pardoned by Sassacus and allowed to return, but twice again, ambition proving stronger than honor, he made the same attempt. After the third effort at rebellion, Sassacus summarily banished Uncas, who then, with a very meager following, took up his residence on Connecticut river. Naturally enough, his band was augmented from time to time by renegades and criminals from other tribes, and his people thus increased in numbers. Thus there grew up an offshoot of the Pequot nation under Uncas, a branch of the tribe for which the need of a new name was felt. In cognizance of the fact that their parent stock had originally come from the Mohican country, it seems to me that the name "Mohican," or "Mohegan," was arbitrarily adopted by these seceders, a name which to the present day has been retained by their descendants who constitute the community at the village of Mohegan. Their language,

¹ So De Forest, *Indians of Connecticut*, p. 59.

of course, remained Pequot, a dialect which shows a more striking kinship with the idiom of the Rhode Island Narragansetts and with the present speech of the Canadian Abenakis than with the language of the Lenni Lenâpe Mohicans.

In view of this fact, then, and in spite of their tradition, it seems probable either that the Pequot-Mohegans were only distantly akin to the Mohicans of the Hudson river region, or that the Pequots had modified their language to a New England form during the years of their immigration into Connecticut. The former theory is the more likely of the two. There is no reason to doubt that the Pequots came originally from the valley of the Hudson. In spite of the noteworthy similarity of language between all the Connecticut tribes, the Pequots were always regarded as detested aliens by the other Indians of this region.

This whole question regarding the mutual relationships of the eastern Algonquian clans is a very obscure one and has yet to be unraveled.

There are very few full-bloods left among the modern Pequot-Mohegans; in fact, it may be doubted whether any one of the half-dozen aged people laying claim to this honor has a right to it. Nevertheless, the percentage of Indian blood in the mixed-bloods is rather high. As the blood-admixture has been almost entirely that of the white race, the Indians are rather light complexioned. There is, however, a recognized infusion of Narragansett and Niantic blood.

A most interesting survival of the old tribal government is still to be found in the existence of the chief and his advisory council of three. The present chief, Henry Matthews, called by his people *Wigun*, "the Good," is a venerable man. The chieftaincy, however, which is a life office, is largely nominal so far as authority goes. The duty of the chief is primarily to preside over the council meetings which deal with internal matters or with affairs relating to other eastern Indian remnants. The Pequot-Mohegan council meets occasionally in the old church with the headmen of the Montauks and Shinnecocks of Long island and the Narragansetts of Rhode Island. All these tribal fragments, together with the Pequot-Mohegans, are at present negotiating, with but slight chance of success,

for a large sum of money which has for years been withheld at Albany, New York.

The Pequot language is almost dead, although of late there has been a revival of interest in this direction among the younger Indians. Mrs Fidelia A. H. Fielding and her sister are the sole members of the community at Mohegan who retain a complete knowledge of the ancient tongue. It is from Mrs Fielding's fund of tribal information that I have been able to obtain most of the material in the present article, although I have drawn slightly from other members of the tribe who possess an imperfect knowledge of their language. It is interesting to notice that often an individual Indian is able to recall many curious facts by the stimulus of suggestion. The common language of the Mohegan colony at the present day is English, although even the children are able to use a few native words—frequently opprobrious epithets which they hurl at strangers.

I am at present engaged in collecting these *disjecta membra* at Mohegan, hoping to be able to save something of value to philology before the last Pequot words disappear from the mouths of the people. Much still remains to be done in this direction before the older members of the tribe pass away, as old songs, historical accounts, and fairy tales are still repeated by the old people to each other and to the younger Indians, who show a laudable desire to preserve their traditions so far as they may. Primitive costumes and ornaments are also still in the hands of a few of the elders, who cling to them with a truly touching veneration.

In September of each year there is held at Mohegan a festival which is clearly a survival of the ancient "Green-corn feast." The absentee Pequots nearly all return to their ancestral home on this occasion, and the old church is crowded every year with a great number of people. A wigwam fifty feet square is erected on the summit of a hill commanding a view of the country to the north and south. On this spot, it is said, sentinels were posted in the old days to watch the river highway for the approach of foemen. The wigwam is made of upright chestnut posts supporting stringers of the same material placed about four feet apart. The intervening space is covered with a woven mass of living white-birch saplings

which form, when completed, a tolerably water-proof structure. Ancient custom has ordained the use of chestnut and white birch in their proper places. The entrance is placed on the western side. For several days previous to the opening, the Indians occupy themselves with the preparation of the food called *yô'kêg*, consisting of corn parched and crushed. Oysters, beans, and succotash are also added to the bill of fare. In this connection it should be noted that a very curious wooden mortar (*dûkwâ'ng*) and a stone pestle (*gwûnsnâ'g*) are still in possession of the tribe and are used exclusively, almost as an act of ritual, for the pounding of the parched corn for this ceremonial festival. The mortar is eighteen inches high and measures more than a foot in diameter, while the pestle is several inches thick and exactly as long as an Indian's forearm. Another mortar and pestle, in imitation of the old ones, have recently been made in order to increase the quantity of *yô'kêg* for the festival. The original implements are heirlooms, dating back, according to native tradition, seven hundred years. It is doubtful, however, whether they are really as old as the Indians believe.

Within the wigwam tables are arranged in rows, upon some of **which** eatables are placed, while upon others rest baskets of various **kinds**, wooden spoons, bows and arrows, wooden warclubs, etc. **Here**, however, the Indian character of the festival ceases, for **civilization** has so far permeated their customs that the ancient dances and ceremonies have been entirely discarded. In all other respects **the** feast is identical with the ordinary country church fair.

The composer of the following sermon in Pequot, which has been translated, transliterated, and grammatically analyzed by Professor Prince, is Mrs Fidelia Fielding, who is an admirable type of the old-fashioned Pequot. Regarding the text of the discourse, she writes: "I never preached the sermon in a pulpit; I wrote it to read to people who come to my house."

The Death Song herein given, which Professor Prince has arranged in musical notation, was sung to me by an old man, Lester Skeesucks.

THE PEQUOT LANGUAGE. BY J. DYNELEY PRINCE

The greatest confusion prevails in the minds of many writers on American subjects regarding the term Mohican, or Mohegan.

There can be no doubt that this tribal appellation was primarily and properly applied to the Hudson river Indians of this name who in the eighteenth century lived not only in Hudson valley, but also in eastern New York state, in northwestern Connecticut, and in southwestern Massachusetts—chiefly at Stockbridge, where a real Mohican colony existed until the beginning of the nineteenth century. These are the people whose language Jonathan Edwards Jr and J. Sergeant knew and wrote of, and not the Pequot-Mohegans of the present article.¹ The name *Mûhî'gântak* probably means "Those dwelling on the tidewater," from Delaware *makhaak* "great," and *hikan*, "ebb-tide" (so Zeisberger). As Mr Speck has pointed out, these Mohicans were a clan of the Lenni Lenâpe, and their language was merely a variation of that idiom and only distantly related to the Pequot-Mohegan dialect. We have perhaps the longest connected specimen of the speech of the Lenâpe Mohicans in J. Quinney's *Assembly Catechism*, printed at Stockbridge in 1795.

On the other hand our material relating to the Pequot-Mohegan language is astonishingly meager. Practically all that exists in it are two short vocabularies, the one published by J. H. Trumbull² and the other by J. W. De Forest.³ A version of the Lord's Prayer, dating from Governor Saltonstall's notes (1721), appears in the first annual report of the American Society,⁴ and has been reproduced by De Forest.⁵ This fragment is in such a mutilated condition that I venture to give it below with my own version corrected in the light of investigations based on the material furnished by Mr Speck, who is a student in my department in Columbia University. The value of Mr Speck's discovery of this obsolescent speech is undoubtedly great from the point of view of philology, as he has brought to light a connected text in an Algonquian language of whose grammatical structure and vocabulary we have hitherto known next to nothing. We expect to publish, in a subsequent number of this journal, a vocabulary of some five hundred words and phrases in

¹ See Pilling, *Bibliography of the Algonquian Languages*, s. v. J. Edwards and J. Sergeant.

² See Pilling, *op. cit.*, p. 392.

³ *Indians of Connecticut*, p. 491.

⁴ 1824, p. 54.

⁵ *Op. cit.*, p. 39.

Pequot, taken from Mrs Fielding and other aged members of the Pequot-Mohegan community.

The derivation of the name "Pequot" is not certain. A band of Shawnees, or Sawanos, called *Pikowen*, settled at a nearly date in Pennsylvania in Pequa valley, to which they gave their name. According to a tradition preserved in the Heckewelder manuscripts, the New England Pequots were members of this tribe, which is said to have moved from Pennsylvania to the valley of the Hudson, where they lived for a time with the Lenape Mohicans and emigrated thence as conquerors into Connecticut, according to the account given above by Mr Speck.¹ It is impossible to decide as to the credibility of this tradition connecting the Pequots with the Shawnees. Trumbull derives the term Pequot from *pequítóog*, "destroyers."²

In the phonetic system according to which I have transliterated the Pequot material in the present treatise, the consonants are to be pronounced as in English, except *š* = *sh* and ' = a soft aspirate *h*. Final *g* after *n* is to be pronounced hard; thus, *wâng* = *wâng-g*. The vowels are to be sounded as follows: *â* = *aw* in *awful*; *ā* = *a* in *father*; *ā* = a very short *ā*; *ē* = *a* in *fate*; *ē* is somewhat shorter than *e* in *met*; *î* = *i* in *machine*; *î* = *i* in *pin*; *ô* = a closed *aw*-sound; *ô* = *o* in *note*; *ô* = *o* in *got*; *û* = *u* in *rule*; and *û* = *u* in *but*. The apostrophe has the value of an indeterminate short vowel like the Hebrew *Sh'va Mobile*. The system followed by Mrs Fielding is the ancient one inaugurated by the early missionaries, who had no idea of phonetics. Her method is of course philologically impossible, as she marks neither voice-stress nor length of syllables, nor is she consistent in her orthography. It should be noted that there is no *r* in the dialect, although Mrs Fielding uses this consonant frequently. In her text it simply indicates a stopping of the vowel, following the custom of many New England people in their pronunciation of such words as party ("pah-ty"), Bar Harbor ("Bah Hahbah"), etc.

Mrs Fielding's Text of the Pequot Sermon

1. Mundo chuntum womme skedumbork beyork Mundonog. Mundo
2. mud chuntum boyyug [*sic.*, = boyzug] wotune debecornug dordi

¹ Brinton, *The Lenape and their Legends*, p. 29.

² See Roger Williams, *Key into the Language of America*, p. 22.

3. weyout cheaphugey gersubertor. Mud dooby orwon gogey wotche
4. nedi nenerqudde. Ner sewortum. Ne chuntum Mundo newotinemong
5. wogge mud nebeatshor nedi. Mundo dooby wotinemower womme ske-
6. dumbork. Chunche mud orwon muderporwer doka tionduxku, germudo
7. doka gerkewor. Cheaphugey nunerbiskertoo womme joggwonch. Mud
8. wegunch mud doby beyor Mundonog. Chunche gertub Debe obbud.
9. Mud doby orwon gogey wotche nedi ; dordi weyout cheaphugey ger-
10. subertor. Chunche ger-ounguse wogge Mundo mus wopuddumun undi
11. mus Mundo gertinemong. Mundo woster you Bomkuge dorker skedum-
12. bork [dorker] wong-getusug Noggum wotorhesh. Chunche ger-ounguse wogge
13. Mundo mus puddumun undi mus gertinermong. Ne wogge Mundo beyor
14. youdi Bomkuge nerpu ; youdi wogge womme skedumbork beyork Mun-
15. donog. Nedi mud orwon doobby mottchernor mud nenerqudde dooby
16. nerpu. Mundo ewor : "Chunche gersewortum dokker chunche gerquggi
17. berkedum womme joggwonch mutche." Debe cheme ikekusyu wogge wom-
18. me skedumbork mus beyork doddi noggum Debe obbud. Debe chep-
19. hugey mutche ; weaktum womme joggwonch mud wegunch ; tionduxku
20. wong. Debe mud nenequdde sosunay. Wo cheme ikekusyoe wogge
21. mus wome skedumbork mus beyork debecornug undi mus sewortumug.
22. Mud dooby orwon gertinermong nedi. Chunche gertub nedi wocheme
23. dordi debeug mertorwiug dokker skedumbork. Sume mud chuwork
24. Mundo. Mundo ewor : "Beyounch Ne womme skedumbork wounzug so-
25. suney undi mus germechmikigwong wogge mud nenerqudde gherso-
26. sunne youmbewong." Sume [*sic.*, = wucheme] gertub Mundo orbud.

Fidelia A. H. Fielding.

Phonetic Transliteration

1. Múwú'ndó chù'ntùm wó'mí skí'dúmbá'k biyá'k Múwúndóná'g.
Múwú'ndó
2. múd chùntùm bá'zú'g wótó'ní díbikáná'g dódá'í
3. wiyú't chípó'gí g'súbětò. Mú'd-dá'bí ówó'n gó'gí wú'chí-
4. nídá'í níníkwúdu'. Ní síwá'túm. Ní chù'ntùm Múwú'ndó
níwóti'némóng
5. wá'gí múd níbíchó nídá'í. Múwú'ndó dābī-wóti'némowú wó'mí skí'-
6. dúmbá'k. Chù'nchí múd ówó'n múdepá'wá dó'ká táióndú'kskú
gémú'dú
7. dó'ká gēkí'wú. Chípó'gí núnēbá'íškútú wó'mí jógwá'nch. Múd
8. wí'gunch múd-dá'bí bí'yó Múwúndóná'g. Chù'nchí g'tú'b Dí'bí
á'búd.
9. Múd-dá'bí ówó'n gó'gí wú'chí nídá'í; dódá'í wiyú't chípó'gí
g'súbětò.
- 0. Chù'nchí g'óngú'z wá'gí Múwú'ndó mús-wópú'dumún úndá'í
- 1. mús Múwú'ndó g'tí'némóng. Múwúndú wústú' yú Bómkú'gí, dó'ká.
skí'-
- 2. dúmbá'k, wóngí'túzúg Ná'gúm wótóhí'š. Chù'nchí g'óngú'z wá'gí
- 3. Múwú'ndó mús-pú'dumún úndá'í mús-gēti'némóng. Ní wá'gí Mú-
wú'ndó bí'yó
- 4. yúdá'í Bómkú'gí núpú'; yúdá'í wá'gí wó'mí skí'dúmbá'k biyá'k
Múwúndó-
- 5. ná'g. Nídá'í múd ówó'n dābī-mú'chunú múd níníkwúdu' dá'bí
núpú'.
- 6. Múwú'ndó í'wó: "Chù'nchí g'síwá'túm dóká chù'nchí gēkwú'gí
- 7. bí'kidú'm wó'mí jógwá'nch mú'chí." Dí'bí chí'mí á'íkikúsyú' wá'gí
wó'mí
- 8. skí'dúmbá'k mús-biyá'k dódá'í ná'gúm Dí'bí á'búd. Dí'bí chípó'gí
- 9. mú'chí; wí'ktúm wó'mí jógwá'nch múd wí'gunch: táióndú'kskú
- 0. wáng. Dí'bí múd níní'kwúddú sá'súni. Wú chí'mí á'íkikúsyú' wá'gí
mús
- 1. wó'mí skí'dúmbá'k mús biyá'k díbikáná'g úndá'í mús síwá' túmúg.
- 2. Múd dá'bí ówó'n gēti'némóng nídá'í. Chù'nchí g'tú'b nídá'í wúchí'mí
- 3. dódá'í dí'biüg mété'wiüg dó'ká skí'dúmbá'k. Sú'mí múd chūwá'k
- 4. Múwú'ndó. Múwú'ndó í'wó: "Biyú'nch Ní wó'mí skí'dúmbá'k
wó'nizúg sá'súni
- 5. úndá'í mús g'mí'chmíkgwó'ng wá'gí múd ní'nikwúdu' gēsá'súni
- 6. yú'mbíwó'ng." Wúchí'mí g'tú'b Múwú'ndo á'búd.

Translation

1. God wishes all people to come to Heaven. God
2. does not wish any one to go to Hell where
3. the fire is terribly hot. No one can ever escape from
4. that place. I am sorry. I wish God to help me,
5. that I may not come thither. God can help all people.
6. No one should swear nor lie, steal
7. nor get drunk. Terribly evil are all these things. He who is not
8. good cannot go to Heaven. You must stay where the Devil is.
9. No one can escape from there, where the fire is terribly hot.
10. You must pray that God shall hear you, so that
11. God shall help you. God has made this world, and people
12. and cattle belong to Him. You must pray that
13. God may hear, so that He shall help you. Therefore, God came
14. to this world to die ; here, in order that all people may go to Heaven.
15. There, none can ever perish nor die.
16. God says: "You must repent and you must try
17. to give up all evil things." The Devil is always working so that all
18. people shall come to where he, the Devil, is. The Devil is terribly
19. evil ; he loves all things that are not good ; lying
20. also. The Devil is never weary. He is always working so that
21. all people shall go to Hell, where they will be sorry.
22. No one can help you there. You must remain there forever,
23. where there are many devils and people. Too many do not desire
24. God. God says: "Come unto me all people all (?) who are weary
25. that He (*sic!*) may strengthen you, so that you shall never be weary
26. again." You shall always remain where God is.

Analysis

In the analysis of the above text I have endeavored to give the derivation and to comment on the form of every Pequot word in the sermon. The following abbreviations have been used: Abn. = Abenaki; Del. = Lenâpe-Delaware (from Brinton's *Lenâpe-English Dictionary*); Narr. = Narragansett; Pass. = Passamaquoddy; Pen. = Penobscot; RW. = Roger Williams' *Key into the Language of America*.¹ The Abenaki material is taken from a lexicon of the

¹ *Proceedings of the Rhode Island Historical Society*, 1, 1827. Mr A. S. Gatschet collected a vocabulary from Narragansett Indians in Washington county, Rhode Island, in 1879.

modern dialect which I am at present engaged in preparing. Note that in Abenaki *ñ* has the value of French nasal *n* in *mon*. The paragraph numbers refer to the line numbers of the text and translation.

1. *Mūwū'ndō*, 'God,' appears in Del. *Manitto*; Narr. *manittōwock*, 'gods'¹ (RW. p. 104). In modern Abn. the cognitive *mada-hoñdo* means 'a devil.' The Lenāpe-Mohican word for God was *Palamawos*, 'the one to whom one prays.' *Chū'ntūm*, 'he desires'; note the negative forms *chū'yū'*, 3d pers. sing., and *chūwāk* 3d pers. pl., line 23. This stem is cognate with Abn. *achowal-damen*, 'he wishes.' *Wō'mi*, 'all,' Del. *wāme*, 'all'; cf. Narr. *wāmeteāgun*, 'all things' (RW. p. 115). *Skī'dūmbā'k* 'people'; cf. Narr. *skeetompā-uog*, 'men'; *enesketomp*, 'man' (RW. pp. 49, 115). With the last form should be compared Pequot *in*, pl. *inūg*, 'man,' Narr. *nnin* (RW. p. 44). In Mass. we find *wosketomp* and Pass. *skī'tāp*, pl. *skī'tā'p-wāk*. The last element of the word appears in Abn. *aln-oñba*, 'Indian,' and is identical with *-āpe* in Del.; cf. *lenāpe*, 'a man';² *Bīyāk*, they come; cf. Del. *paan*, Abn. *paioñ*, 'come'; and Ojibwe, *nin-bi-ijā*, 'I come here'; also Narr. *peeyāuog*, 'they come'; *peeyautch*, 'let him come.' *Mūwūndōnā'g*, 'to heaven,' with loc. -g, I cannot find elsewhere. It is of course a derivative of *Mūwā'ndō*, 'God.' I find *Munannock* 'the Sun-god' in Narr. (RW. p. 79).

2. *Mūd*, 'not' = Narr. *mat* (RW. p. 48); Del. *'matta*; undoubtedly the same stem as Abn. *oñda*, Pen. *andā*, 'not.' *Bā'zū'g*, 'one, anyone'; cf. Narr. *pawsuck* (RW. pp. 43, 115); Abn. *pāzego*; Ojibwe *bejig*, 'one'; also Pequot *bā'zūgwōn*, 'one thing.' *Wōtō'nt*, 'that he goes,' subj., may contain the same stem with infixed *t*, as Del. *aan*, 'to go'; cf. Narr. *cuthomwock*, 'they go off' (RW. 100). *Dibikānā'g*, the 'Devil-place,' i. e. 'Hell,' with loc. -g. The word *jibātkō'nāgūg*, 'to Hell,' also occurs in Pequot. The first element, *dī'bi* or *jibā'l*, is undoubtedly cognate with Del. *tsipey*, 'a spirit'; Abn. *chibai*, 'a ghost.' *Dōdā'l*, rel. 'where.' This word is *dō + dā'l*. The first element = Abn. *tōni*, 'where,' and *dā'l* is the locative

¹ The Delaware words herein given are to be pronounced according to the German system of the Moravian missionaries. The Narragansett material is written according to Roger Williams' own English phonology.

² Compare Prince in *Amer. Jour. Philol.*, xxi, p. 295.

the vowel of the stem. Cf. Abn. *wd-abin*, 'he sat.' For *Dibi*, see above on *ḏibikānā'g*, line 2. *Abūd*, 'where he is,' is a participle of the verb *ab*, 'sit, stay,' with the usual Algonquian ending of the 3d pers. *-ūd* (Abn. *-it*). We find also in Abn. *abit*, 'where he sits.'

10. *G'ōngū'z*, 'you pray,' with *g'* pref. 2d pers. sing. + *ōngūs*, 'pray'; cf. Abn. *winawoñs-wigamigw*, 'house of prayer'; Del. *wundangunsin*, 'he prays for him.' *Mūs* = sign of the future. See below, line 21. This particle is seen also in Narr. *moocenanipecam*, 'I will come' (RW. 78); it may either precede or follow the subject of the verb; it generally precedes a pronominal subject, thus, *mūs ni bi'yō*, 'I will come,' but we find also *mūs Mūwū'ndō gēt'nēmōng*, 'God will help you'; line 11. *Wōpū'dūmūn*, 'he shall hear.' *Wo* = 'he'; the stem *pūdūm* = 'hear' and *-ūn* is the definite ending as in Abn. *n'wajōnemen awighigan*, 'I have the book.' In Pequot *nīpūd'ūm* means 'I hear.' The stem is cognate with Del. *pendamen*, 'he hears,' and Abn. *podawazina*, 'let us take counsel.' *Ūndā't* is a conjunction 'in order that.'

11. *Wāstū'*, 'he made.' I know no cognate for this. *Yū*, 'this'; cf. Abn. *yū*, Pass. *yut*, 'this.' *Bōmkū'gī*, 'world,' is a curious word. The last part is undoubtedly *ūki*, 'earth'; cf. Abn. and Pass. *ki*, 'earth'; Narr. *mittauke*, 'world' (RW. p. 114).

12. *Wōngītūzūg*, 'all cattle.' The first element must be *wō'mi*, 'all.' With *gītūzūg* cf. Narr. *netasūog*, 'cattle' (RW. p. 95). *Nāgūm*, 'he,' is cognate with Del. *nekama*, Pass. *negum*, and Abn. *ag'ma*, 'he, she, it.' *Wōtōhī'š*, 'they are,' is a compound of *wo* = prefix of 3d pers. + infixed *t* before vowel of the root as in *g'tūb* (see above, line 8) + the root *ō* + *iš*, pl. ending. This *š*, however, is invariably used for inanimates in Narr.

14. *Yūdā't*, lit. 'in this'; see above, line 2, under *dōdā't*. *Nāpū'*, 'that he may die'; cf. Narr. *nīpwi-maw*, 'he is dead' (RW. p. 160); *kunnūppaunim*, 'you perish' (RW. p. 118). The usual Narr. root for 'die' is seen in *kitonckquean*, 'when you die'; cf. Abn. *n'bowoñgan*, 'death'; *n'bowitbelomon*, 'he is condemned to death.'

15. *Mū'chūnū*, 'he perishes'; cf. Abn. *machina*, 'he is dead,' the usual form. *Nīnīkwūdū'*, 'ever,' or with *mud*, 'not,' 'never';

see above, line 4. *Îwô*, 'he says,' contains the same stem as Abn. *-dam*, 'he says it.' I find also Pequot *iwaš*, 'say it.'

16. *Gekwû'gi*, 'you try'; cf. *nî kwû'gi*, 'I try'; this is the same as Abn. *n'gwagwajî*, 'I will try.'

17. *Bi'kidû'm*, 'give up,' is cognate with Abn. *nd-abagidam*, 'I renounce, give up; void excrement.'

19. *Mû'chi*, 'bad'; cf. Abn. *maji*, Pass. *mechi*, Del. *matschi*, 'bad.' See above, line 6, under *mûdêpâ'wâ*. *Chîmî*, 'always' = Del. *metschimi*, 'soon, presently'; Abn. *majemiwi*, Pass. *mechimiû*, 'always.' *Âikikûsyû*, 'he works,' is undoubtedly cognate with Abn. *aloka*, 'work' (*âiki* = *aloka*). For the elision of the *l*, see above, line 8, under *wî'gûn*. *Wî'ktûm*, 'he loves,' is cognate with Abn. *wî'wigi-ba-losa*, 'I would like to go.' In Del. also we find *wingi*, 'fain, gladly.' The Narr. *weekan*, 'sweet, pleasant' (RW. p. 141), is probably cognate here.

20. *Wâng*, 'also,' is clearly cognitive with Del. *woak*, 'and, also.' See on line 26. Note the repetition of the future particle *nûs* here.

21. *Siwâ'tûmûg*, 'they (-g) are sorry.' See line 4, under *Siwâ'tûm*.

22. *Wûchî'mî* is the long form of *chîmî*; see line 17.

23. *Dî'biûg*, 'devils,' pl. of *dîbî*; see line 2. *Mêtê'wîûg*, 'many,' is the same stem as Abn. *msal-ok*, 'many,' Pen. *m'seluk*, Del. *macheli* (Peq. *t* = Abn. and Pen. *s*). *Sû'mî*, 'too many'; cf. Del. *wsami*, Abn. *w'zohîmi*, 'too many.' *Chûwâ'k*, 'they desire.' See *chûntûm*, line 1. The negative is included in this word by means of the *w*; *chu-w-ak*. See above on line 8.

24. *Bîyûnch*, 'come ye'; pl. with *ch* = *š* (see line 12, s. v. *wôtohiš*). This ending appears in Abn. as *-ogw*; *wajônogw*, 'have ye!' *Wô'ntzûg*, 'all,' seems to me to be a plural participial form of *wô'mî*. I write *wô'ntzûg* instead of Mrs Fielding's *wounzug* on the authority of another Pequot. *Sâ'sûnî*, 'are weary'; cf. *gêsâ'sûnî*, line 25, and Narr. *nissowanishkaumen*, 'I am weary' (RW. p. 75). I would rather expect here a plural ending *sâ'sûnîg* or *sâ'sûntûg* in this construction. The stem is identical with Abn. *n'sao'to*, 'I am tired.' The Pequot *sâ'sûnî* is merely a reduplication.

25. *G'mûchmikûgwô'ng*, 'he strengthens thee.' The objective

prefix of the 2d pers. is *g'*. The suffix *-ông* = 'he,' as in line 4; *nîwôti'nêmông*. The root *mîchmîkî* undoubtedly contains the Abn. *m'îkî*, 'strong,' as in *m'îksanowoňgan*, 'strength.' Here again we see the omission of *l*, as in *wîgûn*. *Gêsâ'sûni*; see above, line 24, under *sâ'sûni*.

26. *Yû'mbîwô'ng*, 'again'; *yû*, 'this,' + *mti*, 'time' (?) + *wông* = Del. *woak*, 'also.' See above, line 20, under *wâng*.

The following attempt which I have made to restore Saltonstall's extremely mutilated version of the Lord's Prayer in Pequot¹ will probably be of interest to students of Algonquian philology:

Saltonstall's Lord's Prayer

Co shunongone ihe suck kuck abot. Na naw ui e coom shaw ims nuskpe coue so wunk. Kuck sudamong peamook. Ecook Aiootoomomon ukkee tawti ee ook ungow. A geescuck mee se nam eyew kee suck askesuck myspat honegan. A quon to mi nun namat to omp pa won ganuksh no. Awe ah goon to mi nad macha Chook quoe a guck, ah gread macon jussuon mattum paw oon ganuck puk kqueaw hus nawn woochet. Matchetook kee kucks sudamong, cumme eke go wonk, ah koont seek coomsako oh woonk. Mackeeme mackeme Eeats.

Corrected Version

Kû'sûn wôngônâ'i kî'zûkûk á'bûd. Nânâwâ'i kûmšâ'wîmsên wûskêspî' k'wî'zûwô'nk. Kûksûdâmô'ng pi'mûk. Kûkiwûtûmûmûn ûkî'k yû-dâ'î iwûk ûngâ'ûwâ kî'zûkûk. Mîsi-nân yû kîzûk âski'zûk nû'pûwôni'gân (?). Ākwôntômâ'inûn n'mâtôwômpâwôngânû'kš. Nêwâwâgûntômâinâ nâd-mûchichûkwôêgûk. Ākwi âdwâkonjûswôn mâtûmpâwôngânûk. Pûkwîâ-hûsnân wûchî mûchêtûk. Kî kûksûdâmông kêmîkîgôwônk kâ kwôntsi kûmsâkwôwônk. Michîmî mîchîmî iûts.

Literal Translation

Our (incl.) Father above in Heaven who is. Therefore we honor highly Thy name. Thy kingdom come. Thy will on earth here be as in Heaven. Give to us this day daily our bread. Forgive us our trespasses; as we forgive those who do us evil. Do not lead us into evil. Save us from evil. Thine is the kingdom, thine is the strength and great thy power. Forever, forever let it be.

¹ Published in De Forest's *Indians of Connecticut*, p. 39.

Kū'sun is the incl. 1st pers. pl. poss. of 'our father' from *ūš*, 'father'; in Munsee the form is more correctly given *nuchwenah* with the excl. form ("Munsee Prayer Book"). The Mass. form also is *nūšun*. *Wōngōnd'i* is Abn. *agudai*, 'above.' *Kizūk*, for 'heaven,' is also Mass. *kesukqut*, 'in heaven.' For *ābūd*, see above, line 8. *Nānāwā'i* must be *na-na-ai*, i. e., the demonstr. reduplicated, + *ai* = Abn. *ali*, 'thus.' *Kūmšāwūmsēn*, incl. 1st pers. pl.; same stem as in Abn. *msal-ok*, 'many,' viz., 'we magnify.' *W'askēspi*, 'highly,' has the elements of Abn. *uskidadenna*, 'up, on high,' and *spi*, seen in Abn. *spēgiskwa*, 'in heaven.' *K'wī'zūwōnk* is Mass. *kurwesuonk*, 'thy name'; Abn. *k'wizowōngan*. *Kūksūda-mōng*, 'thy kingdom,' cogn. with Mass. *ketassutamōnk*, 'thy power.' *Pimuk*, 'shall come.' There is no optative ending here in *-ts* as we should expect; cf. *iūts*, 'let it be.' *Kūkiwūtūmūmūn*, 'thy will' or 'power' = Mass. *kukketawutamoonk*, 'thy kingdom.' Cf. Munsee *kekioowaukun*, 'thy kingdom.' *Ūkik*, 'on earth'; Abn. *kik*. *Yū dāt*, see above, line 2. *Ūwūk*, 'it shall be,' with inanimate *k*-ending. *Ūngā'ūwā*, 'like, as,' cf. Del. *elgiqui*, 'similar to.' *Misī-nān*, 'give to us'; cf. mod. Pequot *mī'zūm nū*, 'give me.' *Yū*, 'this'; *kizūk*, 'day'; same word as 'heaven, sky.' *Aškizūk* must be adj. 'daily'; cf. Mass. *asekesukokish*, 'daily.' I have read *nū'pūwōnū'-gān*, 'our (excl.) bread' for Saltonstall's impossible *mysput honegan*. Cf. Del. *achpoan*, Abn. *abbon*, 'bread.' The mod. Pequot word is *tūkūnī'gān*. *Ākwōntōmātnūm*, 'forgive us' (*-nūn* = 'us'). Cf. Mass. *ahquoantamaīinean*. *N'mātdwōmpāwōngānūkš*, 'our trespasses'; note the stem *mat-muchi*; see above, line 6. Cf. Mass. *nummatcheseongash*. Note the pl. *-š* for the inanimate. The locative *-k* precedes the pl. ending. *Nēwāwāgūntōmātnā*, 'as we forgive'; the *casus pendens* 'as,' in this case, is expressed by the overhanging vowel *a*; cf. Abn. *losaana*, 'when I go,' from *losa*, 'go.' *Nādmūchtchūkūwōēgūk*, 'those who do us evil'; *n'* = 'us' excl.; *muchi* = 'evil'; *-uk* = pl. ending; cf. Mass. *matchenenukqueagig*. Saltonstall's *ah gree* is impossible; it must be *ākwī*, 'do not'; cf. Abn. *akwi*, prohibitive particle; Mass. *ahquc*. *Ādwākōnjūsūwōn*, 'lead us not'; neg. expressed by the inherent *w* (see above, line 8). This seems to be a cognate with Del. *takachsin*, 'lead.' *Matūm-pōwōngānūk*, 'into evil'; *-uk* = 'into.' For *mat-* cf. above, line 6,

and *mätowômpawôngânükš*. *Pükwiâhûsnân*, 'save us'; cf. Mass. *polquokwussinnean*, 'save us.' *Wûchû*, 'from out of'; see above, line 3. *Mûchêtûk*; Mass. *matchitut*, 'evil,' in loc. The Mass. makes its loc. in final *t* instead of *k* or *g*. *Kêmikigôwônk*, 'thy strength'; see above on *gêmichmîkigwông*, line 25. *Kâ*, 'and' = Mass. *kah*, as opposed to mod. Pequot *dô'kâ*, 'and'; *kwôntsî*, 'great' = mod. Pequot *gûnchû*, 'great'; Abn. and Pass. *k'chi*. *Kûmsakwôwônk*, 'thy power,' contains the root of Del. *sakima*, 'chief'; Abn. *sôngmô*. *Mûchîmî* = mod. Pequot *wûchîmî*; see above, line 22. *Îûts* is an optative form of the verb 'to be'; 'let it be.' For the ending *-ts*, cf. Abn. *-j:ni alaj*, 'let it be.'

Mrs Fielding's dialect is evidently in a state of decay. She has apparently lost the 2d pers. pl., as she uses the 2d pers. sing. throughout the sermon which is intended to be preached to more than one person. The negative ending in the verb is also obsolescent. The pronunciation of the language, moreover, has quite naturally been affected by the use of English in daily life for several generations. We must regard Mr Speck's modern Pequot idiom, in the words of an old Abenaki to whom some of this material has been submitted, as more or less "White Man's Indian." It is none the less a most interesting specimen of a language which can hardly survive longer than ten years.

Death Song

The following death song, sung to Mr Speck by an aged Pequot, is, in my opinion, a genuine native musical survival. It has much the same character as the Omaha death-song recorded by Miss Alice C. Fletcher.¹

$\text{♩} = 80$. *Very slowly and majestically.*

Yû nî nê- nê- ûn- dâí; jî-

bái o- ké nî kt- pí- áí; nî mûs sê- chû

¹ *Omaha Indian Music*, published by the Peabody Museum, Cambridge, p. 79.

Translation

Here I am. To the spirit land I am coming. I shall pass away.

The form *nî nēnē-ūndā'î* seems to be poetical lengthening of *nî ūndā'î*, 'I am,' from the stem *ā'î*, 'to be'; cf. Abn. *nî ndai*, 'I am.' *Jībā'îokē'* consists of *jībā'î*, 'spirit,' + *okē'*, 'land'; Abn. *chibai-aki*. *Nikî'piā'î*, 'I am coming.' The element *kî* denotes duration, as in Abn. *kiwi-h'lonā*, 'as he looks.' I can find no cognate for *sēchū*, but the singer declared it to mean 'die, pass away.'

*Glossary of the Pequot Words in this Article*¹

Abud 8	Doka 6
Adwakonjuswon LP	Dukwang Intr.
Aikikusyu 17	Gekiwu 7
Akwi LP	Gekwugi 16
Akwontomainun LP	Gemichmikigwong 25
Askizuk LP	Gemudu 6
Ba'zug 2	Gesiwa'tum 16
Bazugwon N. 2	Gesubeto 3
(Ni)bicho 5	Getinemong 11
Bikidum 17	Getub 8
Biyak 1	Gituzug 12
Biyo 8	Gogi 3
Biyunch 24	G'onguz 10
Bomkugi 11	Gunchi N. LP.
Chimi 17	Gwunsnag Intr.
Chipogi 3	In N. 1
Chunchi 6	Iuts LP
Chuntum 1	Iwaš 15
Chuwak 3	Iwo 16
Chuyu N. 1	Iwuk LP
Dabi 3	Ka LP
Dibi 8	Kemikigewonk LP
Dibikanag 2	Kizuk LP
Dibiug 23	Kizukuk LP
Dodai 2	Kukiwutumumun LP

¹The numbers refer to the lines of the sermon; a number preceded by *N.* indicates the philological remark on that line; *LP* = the Pequot Lord's Prayer; *N.LP* indicates the philological comments on the Lord's Prayer. *Intr.* denotes Mr. Speck's Introduction.

Kuksudamong LP	Sasuni 20
Kumsakwowonk LP	Sechu Song
Kumšawimsen LP	Siwa'tum 4
Kušun LP	Siwa'tumug 21
Kwizuwonk LP	Skidumbak 1
Kwontsi LP	Sumi 23
Matumpawonganuk LP	Taiondis N. 6
Metewiug 23	Taionduksku 6
Michimi LP	Tukunigan N. LP
Misi-nan LP	Ukik LP
Mizum ni N. LP	Undai 10; 12
Muchetuk LP	Ungauwa LP
Muchi 17	Us LP
Muchunu 15	Wagi 5
Mud 2	Wang 20
Mudepawa 6	(Mud) wigata N. 8
Muhiganiug Intr.	Wigunch 8
Mus 12	Wiktum 19
Muwundo 1	Wiyut 3
Muwundonag 1	Womi 1
Nadmuchechukwoeguk LP	Wongituzug 12
Nagum 12	Wongonai LP
Nanawai LP	Wonizug, 24
Nematowompawonganukš LP	Wopudumun 10; 12
Newawaguntomaina LP	Wotine N. 4
Ni 4	(Ni)wotinemong 4
Nidai 4	Wotinemowu 5
Nikipiai Song	Wotohiš 12
Nineneundai Song	Wotoni 2
Ninikwudu 4	Wuchi 3
Nunebaiškutu 7	Wuchimi 22
Nu'powonigan LP	Wuskespi LP
Nupu 15	Wustu 11
Owon 3	Yewt N. 3
Pimuk LP	Yu 11
Pudum N. 10	Yudai 14
Pukwiahusnan LP	Yumbiwong 26

A FEW AMERICAN STRING FIGURES AND TRICKS

By ALFRED C. HADDON

If an apology be due for offering so small a number of string figures and tricks from America, my excuse must be that the opportunity for learning them was very limited. It is known that string figures abound on the continent, and now a beginning has been made, it is hoped that many more will be published by other observers.

The method of recording these figures has been fully described by Dr W. H. R. Rivers and myself in *Man*,¹ where a dozen Melanesian examples are given. I here repeat the sections of that paper which deal with the terminology and manipulation:

We employ the term "string figures" in those cases in which it is intended to represent certain objects or operations. The "cat's cradle" of our childhood belongs to this category. "Tricks" are generally knots or complicated arrangements of the string which run out freely when pulled. Sometimes it is difficult to decide which name should be applied.

A piece of smooth, pliable string should be selected which is not liable to kink. A length of about 6 ft. 6 in. (2 meters) is usually the most suitable; the ends should be tied in a reef knot, and the ends trimmed. A spliced, knotless string would be best of all.²

Terminology. — A string passed over a digit is termed a loop. A loop consists of two strings. Anatomically, anything on the thumb aspect of

¹ October, 1902, No. 109, p. 146.

² My friend Dr A. Sheridan Lea, F.R.S., has kindly sent me the following description of the method of making a "long splice":

"The ends of a rope, or of a string when the latter is made of distinct strands twisted together, as is the case with all ropes, may be united so that the join is practically no thicker than the rest of the rope or string. This is done by means of what sailors call a 'long splice.' To make a long splice: (*First*) Unlay the strands of each end of the rope or string, for a distance rather longer than half the desired length of the splice, taking care not to destroy the corkscrew-like twists of the several strands. Then interlace or 'marry' the strands, as shown in figure 5, I, by putting each strand of one end of the rope symmetrically in between two strands of the other end. (*Second*) Bring the ends of the string closely together so that strands 1 and 2 (and therefore also the other strands) touch each other as shown in figure 5, II. Then, leaving strands 1 and 2 in the position shown, unlay strand 3 backwards toward A and fill up the space thus made by laying strand 4 into the place of strand 3. This is easily done if the twist has not been taken out of the several strands. Next unlay strand 5 toward B, and, as in

the hand is termed "radial," and anything on the little-finger side is called "ulnar," thus every loop is composed of a radial string and an ulnar string. By employing the terms thumb, index, middle-finger, ring-finger, little finger, and right and left, it is possible to designate any one of the twenty strings that may extend between the two hands.

A string lying across the front of the hand is a palmar string, and one lying across the back of the hand is a dorsal string.

Sometimes there are two loops on a digit, one of which is nearer the finger-tip than the other. Anatomically, that which is nearer to the point of attachment is "proximal," that which is nearer the free end is "distal." Thus, of two loops on a digit, the one which is nearer the hand is the proximal loop, that which is nearer the tip of the digit is the distal loop; similarly we can speak of a proximal string and a distal string.

In all cases various parts of the string figures are transferred from one digit or set of digits to another or others. This is done by inserting a digit (or digits) into certain loops of the figure and then restoring the digit (or digits) back to the original position, so that they bring with it (or them) one string or both strings of the loop. This operation will be described as follows: "Pass the digit into such and such a loop, take up

the case of strands 3 and 4, lay up strand 6 into the space left by strand 5. The string will now have the appearance shown in figure 5, II. (*Third*) Knot strands 1 and 2 together by a simple overhand knot (the first half of an ordinary reef-knot), as shown in figure 5, III, and pull the knot tight so that it lies flush with the surface of the string. Knot strands 3 and 4, and 5 and 6, together similarly to strands 1 and 2. (*Fourth*) Pass the end of strand 1 over the strand next to it (*a* in figure III), and under the next

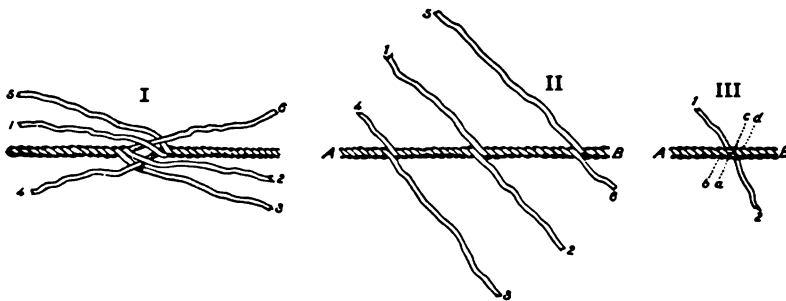


FIG. 5.—Method of making the "long splice."

strand but one (*b* in figure III) and pull tight. Do the same with the end of strand 2 by passing it over *c* and under *d* in figure III and pull tight. Pass the end of strand 1 once or twice again over and under the strands next to *b* toward A, and do the same with strand 2, working it toward B in figure III. Then finish off strands 3, 4, and 5, 6, in a way exactly similar to that given above for strands 1 and 2. (*Fifth*) Roll the splice between two hard flat surfaces. Stretch the splice thoroughly by a prolonged steady pull; cut off the protruding ends of the strands close to the string, and the splice is finished."

such and such a string, and return." In rare cases a string is taken up between thumb and index. A digit may be inserted into a loop from the proximal or distal side, and in passing to a given loop the digit may pass to the distal or proximal side of other loops. We use these expressions as a general rule instead of "over and under," "above and below," because the applicability of the latter terms depends on the way in which the figures are held. If the figures are held horizontally, "over and above" will correspond as a general rule to the distal side, while "under and below" will correspond to the proximal side. In some cases when there is no possibility of confusion, we have used the shorter terminology.

A given string may be taken up by a digit so that it lies on the front or palmar aspect of the finger, or so that it lies on the back or dorsal aspect. In nearly all cases it will be found that when a string is taken up by inserting the digit into the distal side of a loop, the string will have been taken up by the palmar aspect, and that the insertion into the proximal side of the loop involves taking up the string by the dorsal aspect of the digit.

Other operations involved are those of transferring strings from one digit to another and dropping the strings from a given digit or digits.

The manipulation consists of a series of movements, after each of which the figure should be extended by drawing the hands apart and separating the digits. In some cases in which this would interfere with the formation of the figure, a special instruction will be given that the figure is not to be extended. Usually it is advisable to keep the loops as near the tips of the digits as possible.

There are certain opening positions and movements which are common to many figures. To save trouble these may receive conventional names; the use of these will soon be apparent, but it is better to repeat descriptions than to run any risk of obscurity.

Position I.—This name may be applied to the position in which the string is placed on the hands when beginning the great majority of the figures.

Place the string over the thumbs and little fingers of both hands so that on each hand the string passes from the ulnar side of the hand round the back of the little finger, then between the little and ring fingers and across the palm; then between the index and thumb and round the back of the thumb to the radial side of the hand. When the hands are drawn apart the result is a single radial thumb-string and a single ulnar little-finger string on each hand with a string lying across the palm.

This position differs from the opening position of the English cat's cradle in which the string is wound round the hand so that one string lies across the palm and two across the back of the hand with a single radial index string and a single ulnar little-finger string.

Opening A.—This name may be applied to the manipulation which forms the most frequent starting point of the various figures. Place string on hands in Position I. With the back of the index of the right hand take up from proximal side (or from below) the left palmar string and return. There will now be a loop on the right index, formed by strings

passing from the radial side of the little finger and the ulnar side of the thumb of the left hand, *i. e.*, the radial little-finger strings and the ulnar thumb strings respectively.

With the back of the index of left hand take up from proximal side (or from below) the right palmar string and return, keeping the index with the right index loop all the time so that the strings now joining the loop on the left index lie within the right index loop.

The figure now consists of six loops on the thumb, index, and little finger of the two hands. The radial little-finger string of each hand crosses in the center of the figure to form the ulnar index strings of the other hand, and similarly the ulnar thumb string of one hand crosses and becomes the radial index string of the other hand.

The places where the strings cross in the center of the figure may be termed the crosses of Opening A.

TUKTUQDJUNG. CARIBOO OR REINDEER. (*Eskimo.*)

Opening A.— Pass index finger of right hand distal to the little-finger loop, and passing round the ulnar side of that loop, bring it up from the proximal side into the thumb loop, and with the index finger pointing downward, take up with the back of the index finger the radial thumb string and return. There are now two loops on the right index and a twisted loop on the thumb. Let go right thumb. Pass right index finger to the radial side of the right little-finger loop and return, giving it a twist. Pass right thumb into the right double index loop from the proximal side and extend those loops slightly. Remove loop from left index finger and pass it from the distal side through the double loop on the right index finger and thumb, and proximal to the two radial strings, and return the loop to the left index, passing these two strings on their radial side. Drop the double loop on the right index and thumb. Let go left thumb and extend the figure by drawing the hands apart and separating widely the two strings that pass from one hand to the other.

This figure was first described and figured by Dr Franz Boas;¹ indeed, so far as I am aware, it was the first description of a string puzzle published by any anthropologist. Dr Boas demonstrated this figure to me and has kindly given me permission to republish it. The figure apparently is intended to represent the side view of a reindeer's antler.

¹ "The Game of Cat's Cradle," *Internat. Archiv für Ethnographie*, 1, 1888, pp. 229-230, fig. 1.

DRESSING A SKIN. (*Thompson Indians*, British Columbia.)

Opening A.—Release little fingers and allow the loop thus released to hang down. With a swinging motion throw this loop over the remaining strings so that it falls over their radial side.

Pass each thumb into its own loop distal to the corresponding string of the former little-finger loop and extend the figure.

This and the following figure were learned by Mr Harlan I. Smith, of the American Museum of Natural History, New York, when on the Jesup North Pacific Expedition, and are illustrated by him in the *Memoirs of the American Museum of Natural History*.¹ Mr Smith kindly taught me these two figures and permitted me to publish descriptions of them.

PITCHING A TENT. (*Thompson Indians*.)

Position I.—Take up with the right index the transverse string on the left palm from its proximal side, give it one twist and return. Pass the left index through the right index loop from the distal side and take up the transverse palmar string of the right hand from the proximal side and return through the loop. Drop the thumb and little-finger loops of the right hand and pull the hands apart.

This figure is precisely the same as that known in Torres straits as the "fish-spear."²

CROW'S FEET. (*Cherokee*.)

Opening A, but with central loop on the middle fingers instead of on the index fingers. Close together the four fingers of each hand and insert them into the thumb loop from the distal side and transfer the radial thumb string to the ulnar side of the little fingers. Extend the figure. Pass each thumb over the radial index-finger string and into the middle-finger loop from the proximal side. Release middle fingers. By this manipulation the middle-finger loop has been transferred to the thumb. Transfer the loop on the back of each hand to its respective middle finger. Pass each radial little-finger string from the proximal side through middle-finger loop and replace on ulnar side of little finger. A

¹ Vol. II; Anthropology, vol. I, "The Thompson Indians of British Columbia," by James Teit, edited by Franz Boas; fig. 270, p. 282.

² See *Man*, op. cit., 1902, p. 149.

string passes from the ulnar side of one little finger to the other; transfer this over the little fingers to their radial side. Release thumbs and draw tight.

This figure was taught to me by a Pullman porter of European, negro, and Cherokee parentage.

THREADING A CLOSED LOOP. (*Omaha, Pawnee, Kwakiutl.*)

Take a piece of string about eighteen inches in length, and, beginning a few inches from one end, twist the middle portion of the string three or four times round the left thumb in the direction toward the body. Then make a loop which projects outward between the thumb and index finger of the left hand, and hold it between those digits. Drop this end of the string and take up the other about half an inch from its extremity with the index finger and thumb of the right hand. Make movements as if threading the loop with this point of the string. Suddenly slip the string round the point of the left thumb and it will appear as if the loop had been threaded by the string held in the right hand.

This trick is well known to Europeans and it occurs in Japan. Mr Francis LaFlesche, the talented Omaha collaborator with Miss Alice C. Fletcher, told me that this puzzle was known to the Omaha and Pawnee.

Dr Franz Boas has informed me that he has found this trick among the northwest tribes of America. There are two shamanistic societies among the Kwakiutl. This trick is used to identify the members of one of these societies when they hold their secret meetings in the forest. The members of the other society are recognized by another trick: They employ a little stick, to the middle of which a string is fastened. The toggle is put in the mouth and when the mouth is opened the stick appears to perforate the tongue. I understand this is accomplished by means of a second piece of wood secreted in the mouth and placed in a suitable position with the tongue.

AN OMAHA STRING TRICK

Hold the left hand pointing away from the body, thumb uppermost. Suspend the string loop on the thumb of the left hand so that there is one depending palmar string and one depending string



1



2



3



4



5

NAVAHO STRING FIGURES

1, Two hogs. 2, Carrying wood. 3, Many stars. 4, Owl. 5, Lightning.

on the back of the hand. Pass the right index, with its point away from the body, under the palmar string and between the thumb and index of the left hand, and take up the dorsal string from the distal side and bring out a loop on the proximal side of the palmar string; give this loop a twist, clockwise, and pass it over the index finger of the left hand and draw tight. Perform the same manipulation between the index and middle fingers of the left hand and place the twisted loop on the middle finger, and so on for the remaining fingers of the left hand. Release the left thumb and pull the palmar string; the knots will then run out.

This trick, which is precisely the same as *kebe mokeis* of Murray island, Torres straits,¹ and which also has been shown to me by a Japanese, was taught to me by Mr LaFlesche. The Omaha also know the trick of taking a ring which is threaded on a loop the ends of which are fastened.

THE NA-ASH-KLO OR STRING FIGURES OF THE NAVAHO

When visiting Chicago in October, 1901, I was able, through the good offices of Dr George A. Dorsey, to see something of two old Navaho men who happened to be passing through that city. I very soon found that they were well acquainted with string figures, but, owing to shortness of time, I was able to learn only half a dozen of them. I showed several Papuan string figures and tricks to the two Navaho, and they were particularly delighted with the tricks called *lewer* and *monan*, which they learned after considerable difficulty. I can not tell whether they have remembered these two tricks; but the fact is here recorded that they have been taught to two Navaho men. Dr Dorsey very kindly had the photographs which illustrate this paper taken for me by the Museum photographer. (See plate xv.)

On my return to New York in December, 1901, I had the pleasure of meeting Mr A. M. Tozzer, who had just returned from an ethnological expedition to New Mexico. He too had discovered the prevalence of these puzzles among the Navaho and had recorded the names of twenty-six, of which he had made rough sketches. Following is a list of those for which Mr Tozzer had English names. "Carrying wood" is the only one he had learned to make.

¹ Compare *Man*, op. cit., p. 152.

Man, <i>děnně</i> .	Coyote (prairie wolf), <i>ma-ī</i> .
Sternum with ribs, <i>ai-yit</i> .	Owl, <i>nas-ja</i> .
Woman's belt, <i>sīs</i> .	Bird's nest, <i>a-to</i> .
Carrying wood, <i>chiz-jō-yēt-lī</i> .	Horned toad, <i>na-a-sho-ī-di-chizi</i> .
Bow, <i>at^h-ti</i> .	Butterfly, <i>ga-hi-ki</i> .
Arrow, <i>ka</i> .	Star, <i>so-a-hinat^hsan-^hfi-ī</i> .
Hogan (or Navaho hut), <i>hogan</i> .	Large star, <i>so^h-so</i> .
Two hogans, <i>naki-hogan</i> , or <i>at^h-sa-hogan</i> .	Two stars, <i>so^h-bi-terē</i> .
Sand-painting figure, <i>*os-shis-chi</i> .	Many stars, <i>so^h-tlani</i> .
	Lightning, <i>atsinil-klish</i> .

If the completed figure is carefully released from the hands and placed on the lap, and the two lateral strings are picked up about the center and pulled apart, it will be found that the figure immediately becomes untangled.

The general name for these figures is *na-ash-klo*, according to Mr Tozzer. The term *na* signifies a "continuous movement"; *ash* is "I," and *klo* is the root word of "weaving." Perhaps "continuous weaving" would be a fair translation of the Navaho word.

The Navaho (Navajo of the Spaniards) term themselves *Děnně*, which simply means "men" or "the men."

HOGAN

Hold the left hand with the fingers pointing upward. Pass the string over the index and middle fingers of the left hand, allowing a long loop to hang down from its palmar aspect. Place the right hand within the long loop from below, pass the index finger of the right hand between the index and middle fingers of the left hand, and take up from above the dorsal string and pull it out between the fingers as far as it will go toward the right, letting the long loop slip over the back of the right hand. Draw tight. Place the right hand within the long loop from below; pass the right thumb and index distal to the short transverse string; take up the two strings immediately between the index and middle fingers of the left hand and draw toward the right so that the loop on the back of the right hand slips over the hand and over the two central strings. Draw tight.

There are now a knot and four strings lying along the palm of the left hand, two central strings which pass between the index and

middle fingers, and two lateral strings. Pass the long ulnar lateral string over the little finger and the corresponding radial lateral string over the thumb. With the thumb and index of the right hand pick up the transverse string of the knot on the palm of the left hand and draw it gently toward the right.

TWO HOGANS

Opening A. — With the mouth take hold of the two crosses of the figure. Drop off the hands all the strings except the little finger (or ulnar) string. Pass both hands from below through the triangle thus formed, and take up with thumbs and indices the loop that has been dropped from the thumb, bringing it over the transverse string and toward the face so as to form an oblong. Insert the little fingers in the oblong from the distal side, but to the outside of the two strings which form a triangle whose apex is in the mouth, and take up on the backs of the little fingers the sides of this triangle. Draw the little fingers apart as far as they will go, releasing the mouth strings at the same time. Hold the middle point of the two central strings with the mouth and place the hands side by side, thumbs outermost. (See plate xv, figure 1.)

To convert this figure into a single hogan, release the mouth strings and the little finger of one hand and draw tight.

CARRYING WOOD

Opening A. — Pass the thumb and index of each hand distal to the index loop and insert into little-finger loop from the proximal side. Release little fingers. Each little-finger loop is now transferred to the thumb and index of their respective hands.

Pass the proximal (that is, the original) loop of each thumb and index over the loop just transferred on to the palmar side of those digits and gently extend the figure. Insert each thumb from the distal side into the radial of the two loops between the thumb and index and extend the figure.

The two central strings that lie side by side represent the carrying band of the Navaho; the other strings represent the wood that is being carried. (See plate xv, figure 2.)

MANY STARS

Opening A. — Pass each thumb distal to the index loop and take up the radial little-finger string from the proximal side and return. Pass each middle finger distal to the index loop and take up the ulnar thumb string from the proximal side and return. Release thumbs. Pass each thumb through the index loop from the distal side and take up from the proximal side the ulnar little-finger string and return through the index loop. Release little fingers. Transfer the middle-finger loop of each hand to the thumb and index by passing these digits to the proximal side of the middle-finger loop, and then round the ulnar middle-finger string to insert them from the distal side into the middle-finger loop. Release middle fingers.¹

Pass the proximal (or original) loop of each thumb and index over the newly transferred loop on to the palmar side of those digits and gently extend the figure. Insert each thumb from the distal side into the radial of the two loops between the thumb and index; press the thumb against the palm, and extend the figure by inserting the middle fingers in the index loops. (See plate xv, figure 3.)

OWL

Position 1. — With left index take up palmar string of right hand from the distal side, and return, giving it a twist. With right index take up palmar string of left hand by the side of and not through the left index loop, and return, giving it a twist. Pass each thumb distal to the index loop, and take up the radial little-finger string from the proximal side and return. Continue as in "many stars." (See plate xv, figure 4.)

LIGHTNING

Hold part of the string with the thumbs and forefingers, the hands being about six inches apart; make a small ring by passing the right hand away from the body and toward the left side, and hold it by the thumb and index of the right hand in such manner that the small ring is away from the body.

¹ Another description of this manipulation is: Transfer middle-finger loop of each hand to thumb and index in such a way that the ulnar middle-finger string becomes the radial thumb string and the radial middle-finger string becomes the ulnar index string. In accomplishing this movement the radial middle-finger string passes distal to the ulnar string.

Insert the index fingers, pointing downward, into the small ring, and the thumbs, also pointing downward, into the large loop. Draw tight. With a turn of the wrists make the thumbs point upward. Insert each thumb into its index loop distally and take up the ulnar index string from the proximal side. Pass each middle finger distal to the radial index string and take up ulnar thumb string from the proximal side. Pass each ring finger distal to the ulnar middle finger string and take up the radial index string from the proximal side. Pass each little finger distal to the ulnar ring-finger string and take up ulnar middle-finger string from the proximal side. Extend the thumbs as far as possible ; then release them gently and throw the released loops over the other strings. The double element of these loops should be close together. Hold four fingers of each hand firmly together and with the thumbs press down the ulnar ring-finger string. (See plate xv, figure 5.)

THE PREHISTORIC RUINS OF THE SAN JUAN WATERSHED IN UTAH, ARIZONA, COLO- RADO, AND NEW MEXICO

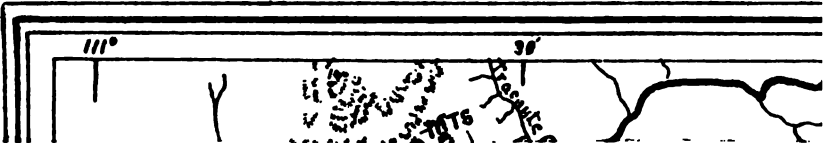
By T. MITCHELL PRUDDEN

INTRODUCTION

In a survey of the widely scattered stone ruins of the southern United States which mark a prehistoric occupancy of regions arid and mostly deserted, it is both convenient and instructive to recognize large natural districts corresponding to the great drainage areas. Such districts are the watersheds of the Gila and its tributaries, of the Little Colorado, of the Rio Grande, and of the San Juan. The ruins in each of these districts are marked by peculiarities of construction and grouping, by apparent differences in material and by types of pottery, fabrics, and utensils, all of which appear to be of considerable significance in the attempt to characterize the early American Indians and to trace the lines of their relationships one another and to existing tribes. When each of these districts shall have been carefully studied and compared, and not until then will the data be at hand for wide generalizations regarding origin, relationships, and period of occupancy of these house-building people.

Aside from the structural differences between the prehistoric ruins in the San Juan watershed and those to the south and west there is a certain fitness in a separate consideration of the San Juan district, because so far as I am aware there is no historic record of early Spanish visitation here and no evidence of Spanish influence, either in the type of building or in the utensils and pottery which excavations here and there have brought to light.

Many of the larger individual ruins and some of the more important groups in the San Juan country have been already described. These will be merely mentioned in the text with suitable reference. But aside from these there are several regions in this great watershed



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shed, most of them quite inaccessible, some of whose ruins have been visited by local curiosity seekers and professional "pot-hunters" but are otherwise unknown save to the cattle-herders and the Navaho Indians.

The writer has for several years spent the summer months in a reconnoissance of the San Juan watershed, which lies in the contiguous districts of Utah, Colorado, Arizona, and New Mexico, locating and determining the general characters of the ruins which are abundant in many parts of the region.

The chief purpose of the accompanying map (plate xvi) is to show the number, location, and grouping of the prehistoric ruins in the district. The aim of the brief descriptive text is to record the writer's observations on the type, size, and degree of preservation of the ruins in the various groups; the extent to which their burials have been disturbed; their relationship to arable land and water supply; their association with pictographs; and, finally, to indicate some of the features of the remoter and less known groups which seem to urge their systematic study under the direction of competent archeologists.

CHARACTERS OF THE SAN JUAN COUNTRY

The San Juan country is so isolated and so little traversed that a few words as to its situation and characters seem desirable.

For two hundred miles the rugged deeps of the great Canyon of the Colorado bar the way across the continent. The transcontinental railroads and the old trails which they have largely usurped swing far to the north or far to the south to shun the chasm which no bridge may span. Thus it is that on either side of the great Colorado Canyon lie vast stretches of the plateau country, unsettled and unvisited save by cattle-men and certain tribes of Indians, mostly Navahos, Utes, Paiutes, and Hopis. It is through this mighty tableland which has parted the ways of travel for so many years and held almost inviolate its primeval solitudes that the San Juan river makes its way westward.

The San Juan and its northern tributaries, the Navaho, the Piedra, the Pine, the Animas, and the Mancos, rise in the San Juan Mountains in Colorado from ten to twelve thousand feet above the

level of the sea (see relief map, plate xvii).¹ The San Juan soon leaves the mountains and winds westward through a sun-baked valley. From the south it is joined by three great tributaries, the Largo, the Chaco, and the Chin-lee, whose broad rugged valleys and imposing stream-beds for nine months of the year are almost wholly dry. From the north the San Juan receives a few dry washes or creeks, the McElmo, Montezuma, Recapture, Cottonwood, Butler, Comb, and Grand Gulch. At length it enters a sheer-walled canyon, more than a thousand feet deep, which, with breaks at intervals, it holds for some forty miles until it sweeps into the great Colorado canyon, two thousand feet below the plateau but still four thousand feet above the level of the sea.

As a mountain stream the San Juan is clear and sparkling. But after it reaches the long valley bottom from two to five miles wide through which it flows westward, it is usually muddy, sullen, and treacherous, abounding in quicksands, changing its bed and bottom with every flood, and washing out and filling in the soil from side to side.

In the more open reaches of the river cottonwoods flourish and huge gravel benches rise on either hand from the alluvial bottom, while back of these great buttes and cliffs mark the vast erosion of earlier times.

The maps, such as they are, of the San Juan River country are very deceptive in the matter of streams. It is a brave showing of tributaries which the river makes on paper in its journey of three hundred miles. But in fact, of the twenty and more which meander across the maps, only the five streams which I have named from the mother mountains carry water except in flood time. The rest are either dry, well-nigh impassable chasms or gulches, or they are rivers of dry sand the summer through, save after some cloudburst in the hills. In the thirty thousand square miles of the San Juan watershed, only in the river itself and in its tributary streams from near its own sources, or in widely scattered springs and pools, is water to be found in summer. So in spite of the illusion of the maps, the great plateau country, here as elsewhere, is brown and dry and waste.

¹ The vertical scale of this relief map was exaggerated about 20-1 in the wax model.

In some portions of the San Juan country there are roads which make a few of the ruins accessible by wagon. But the larger part in the remoter regions can be reached only on horseback and with a pack-train sufficiently large to carry provision for trips of two or three weeks' duration.

The old trails may at times be followed and kept alive by the Indians or cattle herds, and often lead from one ruin to another. But the way is for the most part trackless, and hardy well-trained animals are essential for the rough scrambles up and down the canyons and for the long thirsty rides which often lie between water and water.

In the northeastern corner of the San Juan country, where the living streams come down from the great mountains, are a few towns and some small farming hamlets, while scattered along the narrow valley bottom of the San Juan itself are several fruit-raising villages. The Navaho Indian reservation lies mostly within this watershed, occupying its southwestern segment. But the larger part of the region is tenantless today.

The altitude of that portion of the Great Plateau occupied by the San Juan watershed varies greatly. The San Juan enters the Colorado at about four thousand feet above the sea (see relief map, plate xvii). The larger valley bottoms are five and six thousand feet high; the great mesas range from seven to eight thousand feet. Above these the summits of the Sierra Abajo, Sierra El Late, and the long composite range formed by the Carriso, Luckachucki, Tunitcha, and Choiska rise to ten and eleven thousand, while the lofty spires of the La Plata and those of the great San Juan group reach twelve and thirteen thousand feet. The massive Cretaceous sandstone strata have been tilted near El Late (Ute Mountain) and Abajo, and a great fault runs from the latter a little west of south along Comb Wash and crossing the San Juan bears off toward Marsh Pass. It is these breaks and local uplifts together with the great waterworn canyons which, save in the broad valleys of a few of the larger streams, give the country its imposing ruggedness.

Spruce, pine, piñon, and cedar flourish upon the higher hills and mesas, while upon the lower levels scrub-oak, sage-brush, and greasewood stretch for miles over the rocky slopes and along the broad

arid valleys. The thick-leaved and the narrow-leaved yucca, mesquite, and various forms of cactus are abundant in many regions. Along the water-courses scrub-oaks, cottonwoods, aspens, and willows lend a touch of greenness to the general dull brown and red. Now and then the bottom lands are tinged with green from coarse weeds which carpet them, but save in the mountains green is scanty except in the spring and after the rainy season when tufted grass spreads over the favorable bottom lands, along the moister sags in the mesa tops, and up the lower slopes of the mountains.

Extensive coal beds are exposed here and there in many parts of the watershed. West of the Luckachucki one may ride for miles over a fallen petrified forest. On many long and weary stretches the sand lies in vast billows or drifts before the wind in blinding clouds, or in stately whirling columns rises high in the air. The swish and roar of these sand-pillars as they rush by before the wind is one of the few sounds which break the general silence of these desert reaches of the Great Plateau.

It is very hot and dry in summer all over this section of the country. The high, wind-swept mesa tops are bleak and forbidding in winter. But in the sheltered valleys and along the southern faces of the canyon walls the winter climate was happily tempered to the habit and requirements of the sun-loving aborigine whose life though adapted to stuffy houses and sheltered nooks was spent chiefly out of doors.

THE MAP

The map is based largely on the topographic maps of the United States Geological Survey which have been reduced by photography and retraced. Since, however, some of the sheets, especially those of the country north of the San Juan, are only the results of early reconnoissance surveys and are not sufficiently accurate in certain minor details, it has been necessary in some regions to redraw the map on the basis of my own field observations. These revisions are not topographically accurate, but they represent the relationship of stream-beds so closely that the writer is confident that any worker in the field can locate the ruins upon them. The Survey sheets of some portions of the upper San Juan watershed are still unpublished, and the data for these regions have been gleaned from various sources

and corrected by field work. The aim in the outline map has been primarily to indicate the drainage, with rather general suggestions taken from the Government surveys of thousand-foot contours.

THE METHOD OF EXPLORATION

The method adopted to secure reasonable completeness in the search for ruins in this vast country has been to find in each region under survey, whenever this was practicable, some person who was familiar with the territory, whether large or small, and to attach him to my party. In some cases, in regions not far from the settlements, some one among the ranchmen could always be found who had been interested in these striking objects and had spent much time in visiting them. More frequently in the northern San Juan country it was found advisable to enlist the services of cattlemen, some of whom spend a large part of the year ranging over the great plateaus, either herding the cattle in their charge or seeking for "strays." These men, long in the business, often develop a remarkable acuteness and repeated experiences have shown that the observant cattle-ranger is apt to know all the important ruins in his district.

In the south country, one or two Navaho Indians were almost always joined to our party, and they too, if one be critical in the selection, are often extremely well-informed as to the situation of ruins. When no person acquainted with the region to be traversed was at hand, the well-known skill and resourcefulness of my constant associates in these wanderings, the Wetherills, and especially Clayton Wetherill,¹ were largely drawn upon in the independent search for ruins.

Thus through the employment of a large number of helpers, each well acquainted with his limited region, and by the thorough exploration with these as well as without them, it may be assumed

¹ I wish here to express my appreciation of the invaluable services of Clayton Wetherill. His wide knowledge of the country and the conditions under which alone the long journeys into these desert regions may be successfully accomplished; his large experience in the search for ruins; and his cheerful helpfulness under all the vicissitudes and hardships of the way have largely contributed to the scientific value of this research and to the pleasure with which each day's achievement has been linked.

that practically all of the larger ruins and most of the smaller ones in the San Juan watershed have been visited by the writer and are indicated on the map. Of course, some tracts have not been traversed, and in the most carefully explored regions the lines of the trails often lie far apart. But considerable experience in this field leads one to a fairly accurate judgment as to the situations in which ruins may or may not be. Thus there are large bare uplands, many square miles in area, and broad, sandy, sun-baked desert valleys which after a comparatively brief search may be safely dismissed as untenanted.

Every valley to the north and the south of the San Juan has been traversed by the writer and his parties, those to the north with especially great care. Most of the great mesas also between the valleys have been searched by the writer in person and by his associates. It is, however, probable that on many of the great piñon-clad uplands there are still small houses which have escaped discovery.

There are throughout the San Juan country, as well as in adjacent districts, many small, scattered, artificial stone-heaps and remains of small, isolated, single-room buildings, sometimes near, sometimes remote from well-defined house ruins. Such structures I have not indicated on the map. All of the ruins located on the map are such as from size or manifest evidence of occupancy, such as pottery, burial mounds, etc., have certainly been used as dwellings, or presumably as outlook towers or defensive structures.

I shall first make some brief statements regarding the general characters and structural types of the ruins in the San Juan region and shall then describe the ruins and ruin groups in the various districts throughout the entire watershed—first, those along the San Juan itself, then those in the northern, and, finally those in the southern sections.

I have not attempted in this brief summary of the ruins of this great district to give detailed descriptions, but only to bring together, in the simplest fashion, the data for a comprehensive inventory which may be useful in further studies in this or in other regions of the ruin area in the Southwest.





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1. Group of open ruins, partly fallen, on the Yellowjacket, opposite mouth of Dawson Creek, Colorado. 2. Square building on the slope of Yellowjacket Canyon, opposite mouth of Dawson Creek. 3. Small open ruin with periton of standing wall, overlooking Nigger Canyon in the Yellowjacket group. 4. Small structure of jacal and adobe on the floor of a large cave in Grand Gulch, Utah.

GENERAL CHARACTER OF THE RUINS

The ruins in the San Juan watershed vary greatly in size, form, and situation. Thus some of them are so large as to contain several hundred rooms (plate xxv, 1; xxvi); others consist of a single enclosed chamber or of a simple tower (plate xviii, 2). Some stand upon commanding summits; some at the edges of the great mesas (plate xxiv, 3), or in the sheltered valleys at their feet; others, again, are built in caves (plate xxxii, 1) or along sheltered ledges on the faces of the cliffs (plate xxvii, 1).

While it is sometimes convenient to speak of valley dwellings, mesa dwellings, cliff dwellings, and cave dwellings, there appears to be no reason for believing that these distinctions are of deeper significance than marks of an adaptation to their environment of a house-building people lingering in the higher stages of savagery.

Although a knowledge of the actual number of ruins in this section, as well as their grouping, is of intrinsic value in an estimation of the problems which this phase of American archeology presents, there is no reason for believing that the number of ruins affords an exact indication of the populousness of the region at any one time, because the present condition of the ruins seems to point to very great differences in age. Thus, some of the houses, even though standing in exposed situations on the storm-swept summits of the mesas, show still the weathered roof and floor timbers either in place or fallen in upon the shattered walls; while, on the other hand, many of the ruins near by are reduced to formless heaps, and are covered deep with the wear and weather of their stones and by the drift of the sand-laden winds.

Furthermore, excavations which have been made in several places show that buildings, themselves of great age, have been made on the top of still older structures. Finally, as will be shown later, distinctly different structural types of buildings may be found in associated groups which point to a long or an interrupted occupancy of the site.

The material of which the ruins are built is mostly stone, and the nature of the latter depends on the character of the nearest available source. The Cretaceous sandstones from the buttes and cliffs and canyon walls are most frequently cracked into blocks or slabs

(plate XVIII, 1) and laid up with considerable skill, sometimes with, sometimes without adobe mortar. The free surfaces of the walls are often trimmed flat (plate XVIII, 2) and sometimes ground smooth. In some cases, notably in the ruins of the Chaco region, the stability and finish of the masonry is noteworthy (plate XIX). But in localities in which stratified rock is not at hand, as along the river bottoms far from the ledges, boulders from the stream-bed are almost wholly used and are laid up with a large amount of adobe. In such cases the weathering has reduced the ruins to heaps of rounded stones in which the outline of the walls is often not easily traced. Such boulder sites are the prevalent form of ruins along the San Juan and La Plata rivers and in the upper Mancos Valley.

Having indicated these two forms of building material—cracked sandstone and boulders—it will not be necessary for the purposes of this paper to enter upon further detail of the masonry or of other structural features, since these are abundantly discussed in special works. It should be stated, however, that while the material of the “cliff” ruins is similar to that just described, in a few cases there are small ruins on the benches of shallow caves which are made of jacal; that is, of loosely woven upright and cross withes and rods (plate XVIII, 4) covered in with thick layers of adobe. These, however, were probably of later origin than the more typical and common cliff ruins with which they are associated.

While in the larger proportion of cases the roofs and floors have disappeared from the exposed ruins, in some instances, notably in many large cave ruins and in the large pueblos such as those of the Chaco Valley and at Aztec on the Animas, these though often fallen are still well preserved. On the high plateaus north of the San Juan, a few of the larger exposed ruins have partially preserved roof-timbers fallen in upon the walls. I do not remember to have seen, among the many hundreds of small exposed ruins of the simplest older type widely scattered over the country and presently to be described, one in which the roof or floor timbers are preserved.

CLASSIFICATION AND STRUCTURAL TYPES OF RUINS

Nearly all writers on the ruins of the Southwest country who have been themselves field observers have been impelled to make



PORTION OF THE WALL OF CHETTRO-KETTLE PUEBLO IN THE CHACO GROUP, NEW MEXICO, SHOWING EXCELLENT TYPE OF MASONRY.

more or less elaborate classifications of the ruins, and these for purposes of description are not only useful but almost indispensable. But the more familiar one becomes with these structures and the larger his field of comparison, the less stress, I think, will he lay upon the intrinsic significance of such classifications.¹

For purposes of description, then, it is convenient to group the ruins of this country into several classes, with the understanding, however, that these indicate structural types often at least dependent upon local environment, and not intrinsic or especially significant differences.

The attempt to establish typical architectural forms in the buildings of these ancient people is beset with practical difficulties, owing to the frequent special adaptation in material and in form to particular situations as well as to the skilful incorporation of natural objects, such as caves, benches, cliffs, and fallen rocks, into the structure of the buildings.

I. One may, however, conveniently place in a class together those ruins which stand in the open, either in the valley bottoms or upon the mesas. The ruins standing in the open fall naturally into four groups: First, small isolated or clustered houses or pueblos, each conforming to a distinct primitive type presently to be described; second, irregular and often rambling groups or clusters of houses, usually adapted in form and position to peculiarities of their situation, such as the heads of gulches, the brinks or slopes of canyons, the tops of rocks or isolated buttes, etc.; third, towers and other isolated structures usually standing alone and frequently commanding wide outlooks; fourth, large communal pueblos forming compact, many-roomed buildings.

II. On the other hand, it is convenient to bring together in a second class those ruins which are more or less protected by their situation in shallow natural recesses or caves or upon overhung benches on the faces of the cliffs. Such ruins may stand singly or in small clusters or may be massed to form communal dwellings of

¹The most noteworthy of such classifications are that of Bandelier in the *Papers of the Archaeological Institute of America*, American series, IV, p. 27; that of Nordenskiöld, *The Cliff Dwellers of the Mesa Verde*, pp. 9, 113; and that of Mindeleff, *Sixteenth Annual Report of the Bureau of Ethnology*, p. 93.

considerable size. The houses of this group are commonly called "cliff dwellings."

The so-called "cave dwellings"—or cavate lodges—of which there are but few and these not well defined representatives in the San Juan watershed, are artificial caves dug out of soft rock. Such artificial caves often formed only a part of the dwelling, being frequently in communication, through narrow doorways, with stone structures built against the faces of the soft cliffs in which the caves were dug.

I. RUINS STANDING IN THE OPEN

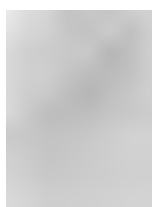
I. RUINS ON APPROXIMATELY LEVEL AND UNENCUMBERED SITES

Early in my studies I gained the impression that the most typical forms of buildings were to be sought in such situations as offered no incumbrances and no adventitious structural adjuncts—such situations, in short, as are found in the open level bottoms or on the approximately level mesa tops.

I found, in fact, that among the smaller ruins which stand in the open, either in the valleys or on the mesas, there is one type which is by far the most abundant and widely distributed, especially north of San Juan River. These ruins are usually fallen (plate XVIII, 3) and are often more or less overgrown with sage-brush or other low shrubs (plate XXI, 2), so that unless the walls are partly standing they form irregular and often inconspicuous stone heaps. They are, however, almost invariably composed of three elements—a series of chambers forming the house, an estufa or kiva, and a burial mound. Such ruins constitute at least nine-tenths of all these smaller isolated structures.

The house in this type of ruin in its simplest form consists of a single row of rooms, each usually five or six feet wide and from eight to ten feet long, with a straight wall upon the back, and a short, right-angled wing at each end: the whole forming approximately one side of a square. This usually opens southward, with an estufa occupying the partially enclosed court. The ground-plan of this type of ruin is shown in the diagrammatic sketch in figure 6.

This simple form of ruin is so common, and it enters so frequently into the structure of many of the larger and more complex buildings, that I have found it convenient to refer to it as the "unit





LARGE OPEN RUIN: FALLEN WALLS OVERGROWN WITH SAGE-BRUSH. AT THE EDGE OF A SHALLOW WASH ON THE YELLOWJACKET PLATEAU, COLORADO.

type." Houses of this type may have only three or four rooms along the back, with single rooms in the wings. Or there may be eight or ten rooms at the back with two or three in each wing. Frequently when there are several rooms along the back there are two or more *estufas* in the court.

The *house* in the most typical of these ruins is usually carefully constructed. The outer walls are from ten to fourteen inches thick, often laid up with two rows of stones dressed on the outer and inner faces, the space between being filled with rubble and

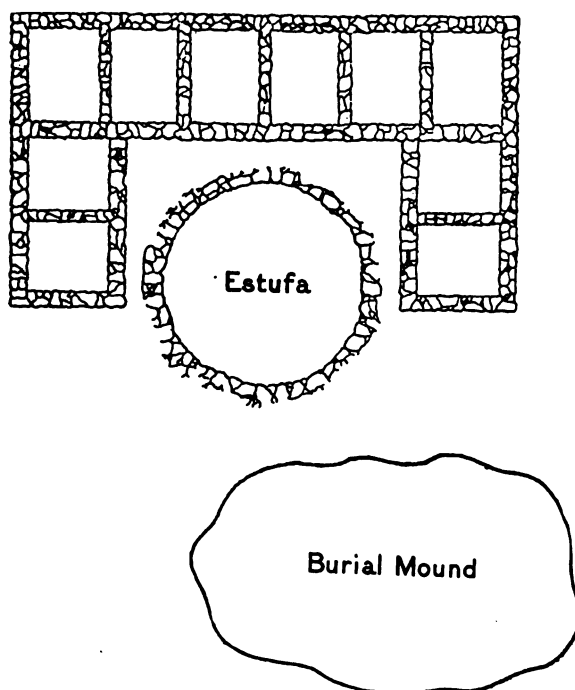


FIG. 6. — Diagram of ground-plan of small open ruins of the "unit type," showing the constant association of house, *estufa*, and burial mound.

adobe mortar. The partitions between the rooms are usually somewhat thinner than the outer walls and often consist of a single row of stones. Small doorways frequently lead from room to room. I have never seen openings in the back or sides, nor have I been able to determine the existence of doorways opening toward

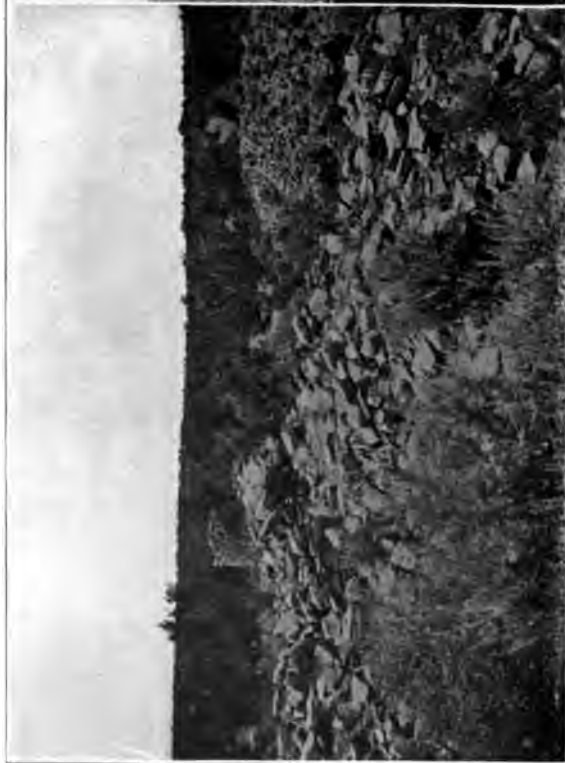
the estufa. The roof timbers, if such there were, have wholly disappeared from these typical ruins. In many cases, though the walls are largely fallen, the outlines of the buildings and rooms are readily made out, or are developed by throwing off a few of the outer fallen stones. In many instances, however, drifting sands have largely covered the ruins, or sage-brush and piñons have grown upon them, so that these and soil conceal most of the structural outlines.

The *estufa* is uniformly circular and is situated within or in front of the court formed by the wings of the house and which looks southward. It is usually sunk below the level of the ground surface and largely filled with earth and fallen stones from its walls, which I have never found rising above the general level when the ruins are built upon earth; they are then shallow circular pits, deepest at the center, and after rains may for a time contain water. Thus it is that they are commonly called reservoirs by the cattlemen and the Navahos. When the building is upon a level rock surface the estufas are built up like the rest of the chambers. But whenever the surface permits, even if it be rocky as at the edges of canyons, the estufas are apt to be situated in the lower and front part of the ruin. I have never excavated one of the estufas, so that I know nothing about their depth or internal structure.

The *burial mounds* which are almost invariably associated with such ruins are, when the surface permits, uniformly south or southward of the house, sometimes close by, sometimes a few feet or yards away. They are sometimes very large, occupying much more ground space than the ruin itself. When not washed out they usually, though not always, rise a little above the general surface of the ground, are of irregular shape, and are more or less abundantly strewn with fragments of broken pottery. The soil on and about the burial mounds is commonly somewhat darker than the surrounding earth, and briars, sage-brush, and other shrubs are apt to flourish upon them.

My aims in this reconnoissance have not led me to make frequent excavations in these burial mounds, though in many instances the prospect of considerable booty in the way of pottery was excellent. I have, however, often followed closely upon the track of the





1. PORTION OF LARGE FALLEN RUIN WITH TOWER, ON JACKSON CANYON, WESTERN
BRANCH OF MONTEZUMA CREEK, UTAH.



2. SMALL FALLEN RUIN, "UNIT TYPE," ON THE YELLOWJACKET
PLATEAU. UTE MOUNTAIN IN THE DISTANCE.

professional pot-hunters and had occasion to note the large number of burials which may be discovered in a mound attached to a very small and inconspicuous ruin. Once on the side of a freshly formed arroyo on Montezuma Creek, I have seen a complete section of the burial mound, the dark earth of which filled a saucer-like artificial depression sunk at the middle portion about two feet below the general surface of the valley bottom. It does not fall within the scope of this paper to record many interesting facts about the forms of burial in these mounds so constantly associated with ruins of this type.

The pottery found in and upon these mounds may be plain gray decorated, or corrugated, or variously painted, usually with black or white surface. Red ware is occasionally found but is not common except in certain limited regions. The bones in these exposed burial mounds are sometimes crumbled, sometimes firm and well preserved.

In earlier days the seeker for hidden treasure or for merchantable relics was wont to pull down the walls of the ruins and to delve beneath the rooms. But since the significance and constancy of the burial mounds have become generally known, the fury of the pot-hunter has been largely diverted to them. It is from these burial mounds of the open valley and mesa ruins that a large part of the pottery is derived which is constantly poured into the bric-a-brac and curio market through ranchmen, traders, and professional vandals.

I am not aware that one of these ruins of the "unit type" has ever been completely excavated. Considerable interest would attach to such a work, which should include not only the dwelling rooms and the estufa but the whole area of the burial mound. While small ruins of this type are sometimes isolated, sometimes strung along the alluvial bottoms of the valleys, they are frequently grouped in villages and then are often placed within a few yards or rods of each other. But in the latter case the three components of the unit are strictly maintained, each dwelling having its estufa and its burial mound.

Ruins of this "unit type" are to be found over the entire ruin area of the San Juan watershed from the upper reaches of the Yel-

lowjacket and its tributaries to the southern limits of the Chaco drainage, and from the Compañero Canyon to Marsh Pass. But it is north of the San Juan, from the Mesa Verde to Comb Wash, that they are most abundant and form, in fact, the largely preponderant type of ruin. In situations favoring the use of boulders, as along the San Juan and La Plata, this "unit type" is also prevalent.

I am disposed to attach considerable significance to this type of small dwelling, with its uniform association of house, estufa, and burial mound, as the simplest expression of an early and primitive phase of the house-building culture. The character of these small ruins as types of residence was overlooked in the earlier surveys of this district, and the significance of the burial mound was not recognized. When receiving special mention the latter was upon simply as a rubbish heap, strewn with broken pottery. It is, in fact, often a rubbish heap as well as a burial mound.

Variants of this type of ruin are common. Thus, there may be a double row of rooms at the back with a single or double row in the wings. In such double rows the back row may have two stories. Or these structural units with either single or double rows of rooms may be placed end to end, often thus forming buildings of considerable length.

Sometimes the wings are prolonged, having several rooms enclosing a square or elongated court which contains the estufas. This is a noteworthy form at the Yellowjacket Spring ruin, and here a low wall was often thrown across the front from wing to wing, the estufas being within the court while the burial mound was in each instance outside and southward of the building.

In various ways these "type units" are frequently placed together, forming large buildings with irregular passageways here and there between them. In such cases it is not infrequently evident from different degrees of preservation and from differences in the character of the masonry that the buildings were made at successive periods.

Among the very unusual forms of isolated open ruins which may be considered as variants of this type I may mention a single straight row of rooms without wings, with estufa and burial mound south, which is on Montezuma Creek; also the placing of two





PHOTO BY CHAS. GOODMAN.

OPEN RUIN BUILT AROUND THE HEAD OF A CANYON—THE CANNONBALL, A TRIBUTARY TO THE YELLOWJACKET, COLORADO.

equal rows of rooms in the form of a V, in the southward angle of which is the *estufa*. This occurs on Comb Wash. In two instances on Montezuma Creek I have seen the *estufa* completely enclosed by a single row of rooms.

While this "type unit" is usually evident even in noteworthy variants where the ruins are built on a level with abundant space around them, this is by no means the case when the buildings stand on uneven ground or on a cramped surface, as upon an isolated rock or point, or when they are built upon the brinks of canyons or, as is frequently the case, around the heads of gulches. But even in such situations one usually finds suggestions of the type form or may find it fully carried out here and there in a complex ruin where a small surface permits it, while the remainder is adapted as best may be to the irregularities of the site.

2. OPEN RUINS ADAPTED TO SPECIAL SITES

The next best defined type of ruins of this class which stand in the open are those which are built around the heads of rock gulches or canyons. The shallow water-courses, often inconspicuous upon the tops of the larger plateaus, are apt to break suddenly into rocky gulches which join to form the great inland canyon feeders of the San Juan River.

The ruins which are built around the heads of such small canyons or gulches are especially numerous in the country north of the San Juan and between the valley of the Mancos and Montezuma Creek in Utah. They are always irregular in form, often composed of a series of isolated chambers or groups of these around the brink of the canyon, and not infrequently extending down the rocky slopes or ledges toward the bottom (plate XXII). The direct line of the stream is usually left clear. Not infrequently a rude stone dam is still to be seen across the shallow sag in the rocks above the ruins. Occasionally there is a shallow cave beneath an overhanging ledge at the head of the gulch in which is a spring or a water-pocket. In several ruins of considerable size built around the cliff edges at the head of a gulch, a rock wall about three or four feet high, often forming a zigzag, stands a few feet outside the line of the ruins, partially or completely fencing them in. The sketch of the ground-

plan of a ruin at the head of East Hawkberry (figure 7), shows the grouping of the ruins and the portions of the low wall at the rear of the houses. Burial mounds are often apparently absent in such ruins, but isolated burials were made beneath neighboring rocks and ledges. Examples of such groups are found at the head of Cannonball Canyon (plate xxii) of East Hawkberry and of Ruin Canyon, which are all tributaries of the Yellowjacket.

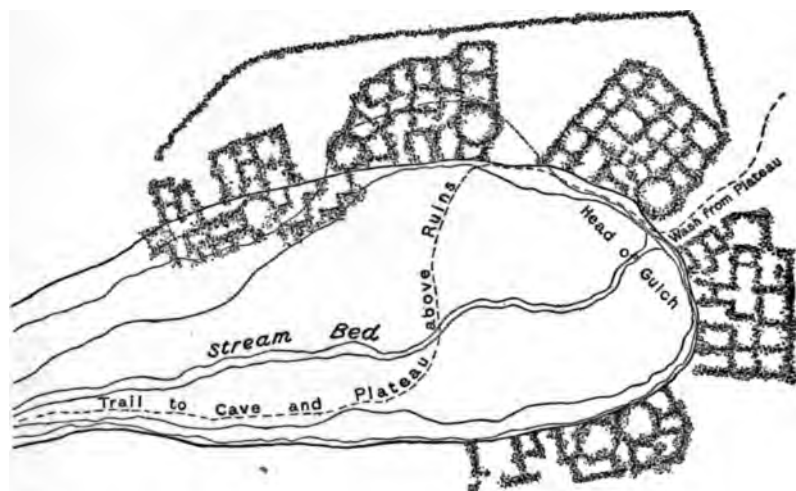


FIG. 7.—Ground-plan of a ruin adapted to the special site at the (East Hawkberry) head of Bridge Canyon, in the Yellowjacket group.

There are many widely scattered ruins of considerable size standing in the open and formed by an irregular mass of chambers from one to three stories high, with estufas scattered here and there among them. Such ruins usually occupy more or less commanding and often distinctly defensive sites, such as the tops of small isolated mesas, or flat, high, rocky points commanding the valley bottoms. There are several such ruins in the northern San Juan country west of the Mancos Valley which contain from forty to sixty rooms and a few which have one hundred to three hundred rooms.

One engaged in practical studies of the ruins of the Southwest is soon led to abandon any notion which he may have derived from the earlier and often conjectural data of the books as to their universally defensive nature. But, on the other hand, there are ruins



1. TOWER FORMING PART OF A GROUP OF RUINS ABOUT THE HEAD OF RUIN CANYON, IN THE YELLOWJACKET REGION, COLORADO.



2. SMALL TOWER-LIKE STRUCTURE ON AN ISOLATED ROCK AT THE HEAD OF RUIN CANYON, IN THE YELLOWJACKET GROUP, COLORADO.

here and there whose situation and construction leave no doubt as to the defensive motive strictly carried out in many details, so that the word fortress, or fortified rock or mesa, may now and then appropriately be used.

3. TOWERS AND OTHER ISOLATED STRUCTURES

Towers of various forms and heights occasionally form a part of composite ruins of various types (plate xxiii; xxiv, 1). The most common examples are in the Yellowjacket group of ruins. Isolated towers and small single-room structures, often commanding wide outlooks, are occasionally found throughout the San Juan district, but are especially common north of the river (plate xxiv, 2, 3).

Small single buildings; large and small low-walled stone enclosures; square or oblong box-like structures from one to two feet across made of thin stone slabs, often apparently empty or sometimes containing a little charcoal, are not uncommon both north and south of the river. Here and there are rows and clusters of thick slabs of stone set upon end (plate xxiv, 4) without other apparent associated structures.

One occasionally finds large, shallow, circular pits having the general appearance of estufas, but much larger and usually standing apart, sometimes several hundred feet from other ruins. They are often sixty feet or more in diameter, and while now largely filled were evidently stone-walled chambers beneath the surface of the ground. Their nature is wholly unknown to me.

4. LARGE COMMUNAL PUEBLOS

The largest of the ruins in the San Juan country are in the form of great pueblos or communal dwellings formed of a congeries of rooms, often several stories high, with either one or more courts which usually open southward. These stand in the open, either in the valleys (plate xxv, 1) or on the tops of the mesas (plate xxvi), and resemble in many ways the great inhabited pueblos like that of Acoma and those of the Hopi group. Such are the ruins in the upper Chaco Valley, the great ruin near the modern village of Aztec in New Mexico, and the so-called "Aztec Spring Ruin" at the foot of the Sierra El Late in Montezuma Valley in southwestern Colorado.

Of similar character, though somewhat smaller, are the ruin near the banks of the San Juan River a few miles below Bloomfield in New Mexico, and several in Utah lying far apart on the high mesas north of the San Juan and west of the Mancos Valley.

Near some of the large pueblos burial mounds of considerable size have been found. In other instances, however, notably in the Chaco group, the situation of the mass of the burials is still unknown.

OPEN RUINS SHOWING INFERIOR CONSTRUCTION

One who examines critically the ruins in various parts of this San Juan district can hardly fail to be impressed with the fact that in many places there are distinct grades of excellence in the construction of the buildings as well as marked differences in the type. On the one hand there are ruins of buildings constructed with much care and skill. These when small and in open situations usually conform more or less closely to the "unit type" or present some obvious variant of this; or when they are large or built in situations requiring special adaptation to locality, they also display skill in construction and painstaking attention to form, stability, alignment, and minor details of the masonry. Near such ruins, when the nature of the site permits, the burial mounds are usually present and often large.

On the other hand there are many ruins widely scattered over this district, but most numerous in the Yellowjacket and Montezuma Creek groups, which though often large and now forming massive piles of stone, are crude in construction. The grouping of rooms is irregular, the alignment of the walls faulty (plate xxv, 2), the masonry unstable. The burial mounds are absent or irregularly placed, some at least of the burials having been made singly under the edges of fallen rocks or at the foot of ledges near the ruins. Pottery fragments, which are so common about the old sites, are few and irregularly scattered.

The impression which one gains from these ruins is of hasty and careless construction and of relatively brief occupancy. It is in this class of structures that one most often finds evidences of the defensive motive in situation and construction. Weathered timbers are often present in such ruins, although they stand in exposed



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1. Round tower with remains of small rooms at its base; in Hovenweep valley, Yellowjacket group, Colorado.
2. Small isolated tower at the mouth of Sand Canyon. The out-look is across McElmo Canyon to Ute Mountain, Colorado. This tower commands the access to several small cliff houses in Sand Canyon.
3. Remains of round tower, with outlook down Hovenweep valley; Yellowjacket group, Colorado.
4. Upright slab of rock at foot of cliff in Montezuma Creek valley, Utah.

situations, and they are rarely much covered by soil ; whereas timbers are rarely present in the older types of ruins except when these are built in protected places such as caves and ledges, or, as in the case of many of the large pueblos, are deeply covered with the wreckage of the fallen upper walls and with soil and drifted sand. The more roughly built ruins are frequently found in the vicinity of the more typical and apparently older structures, and in several such instances it is probable, from the disparity between the amount of building stone remaining and the size of the site, that stones from the older have been used in the construction of the later buildings.

It is of course not easy to judge of the relative age of such ruins from the evidences of weathering, since in many of the valley ruins exposed to the almost constant action of drifting sand the marks of weathering are much more rapidly acquired than is the case upon the high mesas where the sand drift is but slight.

II. RUINS IN PROTECTED SITUATIONS IN CLIFFS

a. CLIFF DWELLINGS

The ruins built in the shallow recesses weathered out of the sand rock in the sides of the canyon walls, as well as those which stand upon narrow ledges overhung and in part protected by the cliffs above, vary in form, size, and material with the differences in site. There are countless intermediate forms between the long, high shelves upon whose brinks shallow stone cabins stand alone or in single rows (plate XXVII, 1) to the shallow recesses at the level of the valley bottom (plate XXVII, 2) in which time and flood and wind drift have dealt less kindly with the old habitations than with those upon the higher levels. There is almost endless variation from the great caverns of the Mesa Verde (plate XXVIII) with their large and still imposing buildings or great masses of fallen walls to the tiny recesses (plate XXIX, 1) with scarce foothold for a pair of rooms.

The belief was developed early in the study of these ruins, and has since been widely entertained, that the builders of houses in natural or artificial recesses or caves in the cliffs represented an earlier and a different phase of culture from that which inspired the buildings, large and small, which stand in the open and which are

necessarily of a somewhat different structural type. But this notion is not justified by the accumulating evidence of the essential identity of the housebuilders' culture, variation in type of structure being clearly accounted for by differences in local environment and by such conditions of change as might readily occur within a very limited ethnical period.

It was obviously important in the choice of a building site in a cliff recess that the slope of the bottom should not be so great as to render insecure the foundations of the buildings, though in many instances this difficulty has been most skilfully overcome. The overhang of the cliff must be such that the water, running in torrents as it often does from the bare rock surfaces above, should fall clear of the building site. The roof of the recess must be solid and not, as is often the case, weathering off in huge blocks or in shaly flakes. The accessibility of the site seems not to have so much concerned the builders, for though in most instances there are simple and natural modes of access even to those cliff ruins which it appears at first impossible to reach, in the last resort they frequently pecked into the rock those foot and hand holes up the steepest slopes which are still not wholly obliterated and still useful. Finally, it appears to have been almost indispensable that the chosen site should have a southward or at least a sunny exposure.

When all these factors are considered, I think it is safe to say that it will be evident to one who travels widely in the San Juan district, searching critically the cliffs and the walls of the canyons and gorges, that a large proportion of the natural recesses which are accessible and suitable in depth, in the slope of the bottom, in the character of the overhanging walls, and in exposure, are now, or give evidence of having been at some time, occupied by buildings. The form, number, and distribution of the cliff houses, then, in any region is strictly dependent on its natural features.

When, therefore, in a study of the accompanying map one discovers certain localities in which cliff houses preponderate and others in which ruins of other types prevail, justifiable inference does not point toward different stages of culture or periods of occupancy or stress of circumstance. It simply indicates that in one case the weathering of the cliffs has led to the formation of recesses adapted

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1. RUIN OF ONE OF THE SMALLER PUEBLOS (WEJE-GE) OF THE CHACO GROUP, NEW MEXICO.
2. RUIN SHOWING INFERIOR TYPE OF MASONRY: ON CARRISO CREEK, A FEW MILES ABOVE CHIN-LEE VALLEY, ARIZONA.



for building sites, while in the others suitable sites have not been formed—either because the dip of the strata, the character of the rock, the nature and rapidity of erosion, etc., have not favored the formation of rock shelters in the cliffs; or, because no cliffs exist.

The size, form, and excellence of the buildings, however, are subject to an extreme variation not accounted for by the nature of the site. Thus there are many large cave-like recesses with excellent exposure, level bottom, wide overhang, and convenient water supply, in which the ruins are small and inconspicuous. There are other caverns, however, presenting similar favorable conditions, in which all of the available space has been utilized for building with a high degree of ingenuity and skill.

Thus the largest cliff dwellings of the Mesa Verde (plate xxviii) afford the most striking and picturesque examples of this form of communal dwelling, equaled by but few others in the entire country. On the other hand, in Grand Gulch, on the slopes of the Butler fault, and along the Chin-lee, equally large and apparently equally favorable recesses contain but few and simple dwellings.

I have entered upon these general considerations here because it is, I think, desirable in a study of the accompanying map to realize how significant an influence the topography and formation of a given locality may have upon the character of the dwelling places.

BURIAL CAVES

There are in some parts of the San Juan district numerous cliff recesses or shallow caves at the level of the valley bottom which apparently have never been building sites but have been used for burial. Such caves are most common along the upper tributaries of Cottonwood Creek, on Butler Wash, and on the lower Chin-lee and its tributaries. Sometimes the number of burials in these caves was very large. In one case (plate xxix, 2) eighty bodies have been discovered in a single cave.

b. CAVE DWELLINGS

The most typical and noteworthy examples of cave dwellings or cavate lodges in the southwestern United States are those in the soft volcanic formation in the narrow canyons in the eastern slopes of the Valles of the great Cochiti Plateau in New Mexico and those

in the sandstone ledges along the Rio Verde in Arizona. There are, however, a few examples in the San Juan district — a small group on the lower Mancos, and another, much weathered, on the San Juan itself, a few miles above the mouth of the Mancos (plate xxx, 1).

WATER SUPPLY

The general subject of the water supply of the early inhabitants of this arid region may perhaps profitably be considered here. It should be remembered, first, that the personal requirements in this respect of these people, as of their successors in this desert country, should not be judged by the standard which a more advanced culture and a different climate impose; second, that few arid regions are actually as devoid of water as they seem to be, and that a long and close familiarity with a dry country often reveals fairly abundant hidden sources of moderate supply.

It is the failure to take account of these important considerations which has so often led to the belief that in the time of these early residents the climate must have differed essentially from the present with a much more abundant rainfall. But while this is a natural first impression it is not sustained by a careful and extended study of the region and the ruins.

If, as has often been the case, one cherishes the notion that the defensive motive was dominant in the selection of sites and in the construction of buildings, and further, that these dwellings are to be regarded as largely fortresses which were in a state of frequent and prolonged beleaguering, the necessity in certain instances of more numerous and more abundant water sources might be conceded. But in the majority of instances the defensive character of the sites and buildings does not seem to me to be at all obvious nor the evidence of frequent sieges at all clear.

In fact, the greater proportion of the larger pueblos (those on the Chaco, the San Juan, the Animas, and the Chin-lee), as well as many of the larger valley villages (those, for example, on the San Juan, La Plata, the Mancos, and the Montezuma), are close beside living streams or stream-beds which bear abundant currents just beneath the surface. Furthermore, many of the large recesses in the walls of canyons and gulches in which the cliff dwellings are



PUEBLO ALTO RUIN : ONE OF THE CHACO GROUP, ON THE MESA NORTH OF THE CANYON—NEW MEXICO.

built furnish a constant trickle of water from the rock strata in their depths—to whose action, indeed, in many instances the weathering of the rocks into cave-like recesses has apparently being largely due.

It should also be remembered that, dry as many of the great sand bottomed washes and canyons may appear, there is along many of them a steady deep flow of ground water which collects here and there, where the rock bottom rises, in great underground pockets beneath the stream-beds or valley bottoms and comes out at times upon the surface.

The ancient resident of this district doubtless knew as well as his successor, the Navaho, knows, exactly where very little digging in an apparently absolutely dry, sandy stream-bed would furnish an abundant and unfailing supply of water. It is illuminating in this connection to travel with a Navaho Indian over the desert country and see how often a little scraping in the dry sand which has blown across the foot of a rock ledge or has gathered in a stream-bed along which you may have been riding for miles, desperately athirst, will reveal a trickle of water running away just beneath the surface. Many of the old springs near the ruins, which constant use would keep open, are now no doubt covered with sand drift. The more familiar one becomes with this country the less keen is his surprise at the occurrence of a little water in what seem the most unlikely situations. This is a land of vast erosion, many thousand feet of sedimentary strata have been washed away over great areas leaving the edges of the remaining portions widely exposed, and one is quite as likely to find a spring far up in the glare on the face of a great cliff or upon the top of a towering butte or mesa as upon the lower levels.

Nor need one assume that for an essentially agricultural people, as these old inhabitants of the San Juan district were, a more abundant water supply than now exists was necessary. The crops which the modern Indian secures in some hot, sun-baked sag in the long slopes which lead down to the dry stream-beds, and the fruit trees which flourish upon the glaring sand-dunes, indicate the presence of moisture in many places not too far beneath the parched surfaces to be reached by the rootlets of the meager crop.

I would not convey the impression that the desert regions of the San Juan are well watered. One who journeys here even under the most experienced guidance has too many memories of long deprivation to be easily led into such a belief. But there are in fact many more sources of moderate water supply in all the regions containing many prehistoric ruins than from the general aspect of the country would seem possible.

On the other hand, that water was not abundant is evident from the many instances, to be everywhere seen, in which, by the construction of small reservoirs and ditches, by the damming of shallow sags on exposed rock surfaces, by the utilization of natural and the construction of artificial water pockets, the collection of rain-water was frequently resorted to.

But after all there are many groups of dwellings of considerable size and many more isolated ruins which appear to be far from any source of water supply, and here the probability of transportation and storage in large jars so frequently found in and about ruins must be admitted.

I think, finally, that the impression and the fact of extreme dryness in many of the valley bottoms which were once populous and devoted to agriculture is due to the widespread formation of great arroyos which have been developed in the alluvial bottoms in recent times, in many instances since the advent of the white man with his herds of cattle and sheep. The close cropping and the trampling of the grass and the formation of deep hoof-cut trails along the sloping valley bottoms have wrought a great change in a large proportion of the valleys of the Southwest. The water from heavy showers and melting snows soon deepens and widens a cattle trail or starts an independent channel in the light alluvium which has lost its protective covering of grass and grass roots. Very soon a great winding channel has been cut in the soil, which deepens and widens with every flood, so that today in countless instances along the erstwhile level grass-clad bottoms, over whose surfaces large volumes of storm-water once ran off harmlessly, are those ragged chasms called arroyos, which often reach to the rock bottom of the valley and from whose sides huge masses of earth crack and fall to be swept along and away by the next flood. Thus an arable

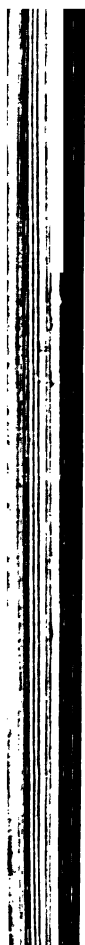
I



2



1. CLIFF HOUSES ON A SHELF IN THE FACE OF THE WALL OF A SMALL WESTERN TRIBUTARY TO THE CHIN-LEE COMING FROM ZILH-LE-JINI MESA, ARIZONA.
2. RUIN IN A SHALLOW RECESS AT THE BASE OF A CLIFF, MONTEZUMA CREEK, UTAH.



valley which was formerly irrigated by its rains and floods has now become a ragged chasm with a fringe of crumbling and rapidly disappearing soil along its sides.

There is, indeed, evidence of the formation of great arroyos and devastation by flood which antedate the coming of the white man and of that veritable blight upon the agricultural interests of the Southwest—the sheep-herder with his flocks. But the appalling devastation in many valleys by the rapidly forming arroyos to which I refer is of recent date.

This brief consideration of recently formed arroyos thus seems to me pertinent in an estimate of the water supply of the prehistoric people, because the regular melting of the snow in many regions, or a single early seasonal rainfall which would formerly have abundantly sufficed for the deep irrigation of favorable valleys for the entire season, now rushes off through the arroyo, working such havoc as may be, and leaving such portions of the alluvium as are still spared largely unwet or subject to direct and speedy seepage into the new open drainage channel.

PICTOGRAPHS

The pictographs of the San Juan district are either painted on the rocks, usually in white or red, or they are pecked or scratched upon the surfaces. The largest single group is on the cliffs facing the San Juan River at the foot of Butler Wash (plate xxxi). There are many painted as well as carven glyphs in Grand Gulch (plates xxxiii, xxxiv). Others are widely distributed usually in the immediate vicinity of ruins or ruin groups, or on the walls of recesses or caves in which the buildings are constructed, less frequently upon the walls of the buildings themselves. Some of the pictographs will be mentioned with photographic reproduction in connection with the ruins of special regions, but my study of them has not been sufficiently extensive to justify any further general observations upon them here.

THE GROUPS OF RUINS IN THE SAN JUAN WATERSHED

A glance at the relief map (plate xvii) shows marked differences between the regions north and south of the San Juan, both in the

topography of the country and, corresponding to this, in the number and character of the ruins, as seen upon the larger map (plate xvi).

The northern tributaries to the San Juan rise largely in lofty uplands or in high mountains. Many of them run for a considerable part of their course through valleys, gorges, or canyons, in whose walls various forms of such caves, recesses, and sheltered benches have been formed as may be adapted with more or less skill and labor to the construction of houses. Many of these valleys have wide or narrow alluvial bottoms which, though apparently dry, are yet in places sufficiently moistened by underground currents and lateral seepage for such primitive agriculture as sufficed for the simple needs of a considerable population.

A large part of the drainage area south of the San Juan is of an entirely different character, save for a limited region bordering the low mountain range which crosses the country from north to south. The three great tributaries to the San Juan from the south — the Largo, the Chaco, and the Chin-lee — rise along the crests of high, arid mesas and depend for their water largely on the melting snows or the seasonal showers, during which there is often a sudden large rainfall. It is a region of high, bare mesas and broad, rugged, basin-like valleys through which wind the mostly dry stream-beds. Thus it is that the southern San Juan district presents in relatively few places the conditions which were adapted to the requirements of the agricultural, house-building aborigines.

It is noteworthy, however, that in the high mountain country to the northeast where rise the San Juan and its perennial tributaries, as well as in the lower slopes of these mountains, although beset with many fertile valleys, there are very few ruins. East of the Animas valley ruins are almost wholly absent.

RUINS ON SAN JUAN RIVER

The ruins in the San Juan Valley are, for the greater part, small and scattered irregularly upon the great gravel benches which, in many places, stretch for miles along the valley a few feet above the river bottom. They are mostly boulder ruins, frequently sand-covered, whose ground-plan is not easily made out today. Occasionally, however, where the sandstone ledges approach the river,





PHOTO BY ALFRED WETHERILL.

PORTION OF ONE OF THE GREAT CLIFF PUEBLOS OF MESA VERDE — THE "SPRUCE-TREE HOUSE," COLORADO.

dressed stone has been used in building. A few ruins, also of dressed stone, are situated on the alluvial bottom below the level of the gravel benches.

With the exception of two small sites on a high mesa top at its junction with Pine River, I have found no ruins on the San Juan above Bloomfield. Just below this village are the first of the small boulder sites which, as indicated on the map, are situated along the river, mostly on the north side, as far down as the mouth of Comb Wash.

It is not necessary for the purposes of this paper to enter upon details regarding the numerous small ruins scattered irregularly along the San Juan Valley (see the map, plate xvi). Although small, most of those whose outlines can be made out seem to be of the "unit type." The burial mounds, though in many places much washed, are typically placed and are often strewn with broken pottery. Many of the mounds, especially between the mouth of the McElmo and Bluff City, have been dug and considerable pottery has been found.

There are, however, as one descends the river, several noteworthy objects.

The only large ruin in the entire San Juan Valley stands upon a low bench at the edge of the alluvial bottom a few miles below Bloomfield. This is called locally "Solomon's Ruin" after the name of the owner of the land on which it is situated.¹ It is built largely of dressed stone, the walls in some places resting upon a foundation of small boulders. It was several stories in height, and contained many rooms, but is now so largely fallen and covered with sand and earth that the plan can be only partially made out. This ruin measures about five hundred feet along the back and is of the communal pueblo type like the ruin at Aztec on the Animas and the great pueblos of the Chaco.

Recently considerable random digging has been done in the search for pottery, and water from an irrigating ditch has been turned

¹ This ruin, as well as others along the San Juan, is mentioned by Newberry in his report of the Exploring Expedition from Santa Fé to the junction of the Grand and Green Rivers in 1859. The report of the expedition, which was in command of Captain Macomb, was published in 1876, from the Engineer Department, U. S. A.

into the ruin, undermining it in several places. Thus the existence of several rooms has been revealed whose walls beneath the covering of fallen stones and soil appear from without to be largely intact, the well preserved timbers above them being still in place. In spite of the vandalism which has had its way with this ruin, there appears to be still promise of interesting results should a proper investigation of what remains be speedily undertaken.

About ten miles above the mouth of Mancos River, on the north side of the San Juan, is a small group of cavate dwellings formed in a stratum of Cretaceous shale exposed here in a low bluff close beside the river bottom (plate xxx, 1). On the top of the bluff, above the now shallow and much weathered remnants of the caves, are ruins of isolated buildings of considerable size. This interesting group of ruins was examined in 1875 by Holmes, who later described and illustrated it.¹ A few similar but smaller cavate lodges on the lower Mancos are described by Holmes² and have also been visited by the writer.

While these cavate dwellings of the San Juan and the lower Manços are in fact partly dug out of the soft rock and are thus in a measure typical of this class of dwelling, they are not especially different in character from the other small cliff houses in this region save that the front of the shallow and in part at least artificial cave, where the front is not weathered or washed away, is walled up. The typical cavate dwellings, on the other hand, of the Verde and the Cochiti region are almost wholly dug out of the soft rock, the wall in front being largely formed of the natural rock while the cave was often connected with an outside building in front. This difference is not emphasized here because it is of fundamental importance, since both phases of dwellings are adaptations to the immediate surroundings of these people. It is, in fact, highly interesting to note how these early folk have utilized these very small and quite local outcrops of soft shale (plate xxx, 2) in favorable situations to secure, with slight expenditure of labor, small dwellings of a peculiar constructional type.

But these examples of this form of dwelling are so small or so largely weathered away that one who should be tempted to make the

¹ *Tenth Annual Report of the (Hayden) U. S. Geological Survey*, 1878, p. 388.

² *Loc. cit.*, p. 390.

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2



1. SMALL CLIFF HOUSE IN TO-WAN-AH-A-CHE CANYON, IN THE MARSH PASS DISTRICT, ARIZONA.
2. BURIAL CAVE ON BUTLER WASH, UTAH.

long journey to the San Juan and lower Mancos for the sake of a study of cavate lodges would risk disappointment, especially in view of the more extensive, varied, and typical groups in the Verde valley which may be reached from Flagstaff or from Prescott, Arizona, or those in the valley of the Rio Grande upon the eastern slope of the Valles now readily accessible from Española in New Mexico.

For several miles down the San Juan below the mouth of the Mancos only the small valley sites are to be found. Just below the mouth of Montezuma Creek, on the north side of the river, is a group of structures of unusual form described by Jackson.¹ On the south side of the river, a short distance above Bluff City, is a large cave containing a group of small houses. This was called Echo Cave by Jackson and was also described and figured by him.²

At the mouth of Butler Wash, which enters the San Juan through a narrow gorge, is a line of sheer, smooth-faced, sandstone cliffs along whose base considerable rock talus has gathered. At the top of this talus for several hundred yards on either side of the mouth of the Butler the faces of the cliffs are rich in ancient graven pictographs. Some of these are cut deep in the rock; some are shallow. In places they are very closely crowded; in others they are superimposed. The figures are of many forms (plate xxxi), some representing men, mountain-sheep, birds, trees, and serpents, together with a host of the conventional figures found in many parts of this watershed, such as rain-clouds, geometrical forms, etc. These petroglyphs it seems to me wiser to record in the accompanying photographic reproductions than in verbal descriptions. The faces of the cliffs are in places weathering very fast and it is important that squeezes or more detailed photographs should be made than was possible in my hurried reconnoissance.³ There are a few small ruins in the valley bottom near these pictured rocks.

¹ *Tenth Annual Report of the (Hayden) U. S. Geological Survey*, 1878, p. 416.

² Loc. cit., p. 418.

³ I have here as in many other places refrained from making paper "squeezes" of the pictographs, because the rock surface is usually considerably weathered and the cast on removal is apt to bring with it such an amount of disintegrated material as perceptibly to damage the edges of the glyphs. It is to be hoped that such impressions may soon be secured in systematic fashion by a more adequately trained worker.

Just below the mouth of Comb Wash, where are a few small ruins, the lower canyon of the San Juan begins, and from here to its junction with the Colorado, though this stretch I have not traversed, I have not been able to learn of any ruins, nor is the character of the country such as would make their existence probable.

RUINS OF THE NORTHERN TRIBUTARIES OF THE SAN JUAN

The entire region drained by the Piedra and Pine rivers appears to be devoid of ruins.

RUINS ON THE ANIMAS

The first of the northern San Juan tributaries along which ruins are found is the Animas, a river of considerable size heading in the high mountains of the Needle and San Miguel ranges. There are many stretches of arable bottom land here and there along the stream, especially in its lower reaches. A few miles above the mouth of the river, near the modern hamlet of Buena Vista, is a little cluster of small ruins in the valley bottom.

Farther up, near the village of Aztec, on a low gravel bench west of the river, lies the group of large pueblos called the "Aztec Ruin." The largest and best preserved of these was over three hundred and fifty feet long at the back and several stories in height with a court facing eastward. Near by are several large stone and earth heaps, indicating older sites. A large mound near the edge of the low bench bordering the valley bottom gives superficial evidence of many burials. It is said that in early days this ruin was used as a stone quarry by neighboring settlers. It is now on private property, and the owner, Mr Kountz, wisely appreciative of the importance of systematic study of these relics of the elder folk, has guarded them from the onslaught of the vandals, so that here one of the most promising of the great old pueblos lies waiting for the trained and authorized explorer. A small opening has been made in one corner of the ruin, through which several rooms may be entered in succession. These are practically intact, with the ceiling timbers in place and well preserved. The exact size and form of this ruin are not evident in its present condition.¹ Within

¹ It was visited by Newberry in 1859, and is briefly described in his report of the *Expedition to the Junction of the Grand and Green Rivers*, published in 1876, p. 80.



1. General view.



CAVATE DWELLINGS ON SAN JUAN RIVER.

2. The weathered remnant of one of the cavate dwellings, showing the soft shale in which the shallow shelters were dug.

sight of this ruin, in the valley bottom, several small sites may be located.

Above this large group of ruins only a few small scattered sites are to be found in the valley of the Animas. Three or four are near the town of Durango.

RUINS IN LA PLATA VALLEY

In the valley of the La Plata, a small stream rising in the mountains of the same name and entering the San Juan a few miles below the mouth of the Animas, there are many small mostly boulder sites. These are widely scattered in the lower reaches of the valley, where arable bottom lands exist, and are most abundant near and below the present village of La Plata, about twenty miles above the mouth of the river. They are mostly on the west side of the stream, near the present Durango-Farmington road.

The boulders are as a rule small, and a considerable amount of adobe mortar was evidently used in the masonry. Many of these houses are now represented by low, scattered heaps of stones, but the "unit type" is often evident. A large number of the burial mounds of these ruins in La Plata Valley have been dug into by local pot-hunters.

There is one larger ruin on a low bench on the east side of the stream, opposite La Plata village, which is described and figured by Holmes.¹ There are a few small boulder sites scattered along the valley bottom up as far as Dale's—the ranch of an early settler in this valley, a short distance below the New Mexico line, which has become a well known stopping place for travelers in this region.

On a point of the gravel bench overlooking the La Plata from the west, a short distance below Dale's, and scattered along the same bench for two or three miles northeast of Dale's, are small boulder sites. Three little cliff houses are to be found near the mouth of a small canyon opening into La Plata Valley a short distance west of Dale's.

A somewhat detailed description, with a plan of the larger building, may be found in Morgan's "Houses and House-Life of the American Aborigines," *Contributions to North American Ethnology*, vol. IV, 1881, p. 172.

¹ *Tenth Annual Report of the (Hayden) U. S. Geological Survey*, 1878, p. 387.

I have found no noteworthy ruins on La Plata River above this point.

RUINS ON THE MANCOS AND THE MESA VERDE

The next tributary to the San Juan from the north is the Mancos. This small stream rises in the western and southern slopes of La Plata Mountains and is the last, reckoning westward, of the San Juan tributaries which carries visible water throughout the year. The Mancos River runs for a few miles at the foot of the mountains through a small open valley in which lies the present village of Mancos; then for several miles it holds its way at the bottom of a narrow canyon dividing a lofty isolated plateau called Mesa Verde. On emerging from the canyon the Mancos turns westward down a great rugged open slope to join the San Juan.

A few boulder sites are scattered along the upper Mancos Valley near and below the village. These are for the greater part upon the gravel benches bordering the arable bottom, and the burial mounds have been much disturbed.

Several ruins along the Mancos Canyon and in the valley below were discovered by Jackson¹ and pictured by Holmes.² But it was not until later that Richard and Alfred Wetherill discovered in the walls of the side canyons of the Mancos, deep in the recesses of the western portion of the Mesa Verde, those great cave ruins which in size, complexity, and structural excellence are the most wonderful and imposing of the cave dwellings in the whole Southwest (see plate xxviii).

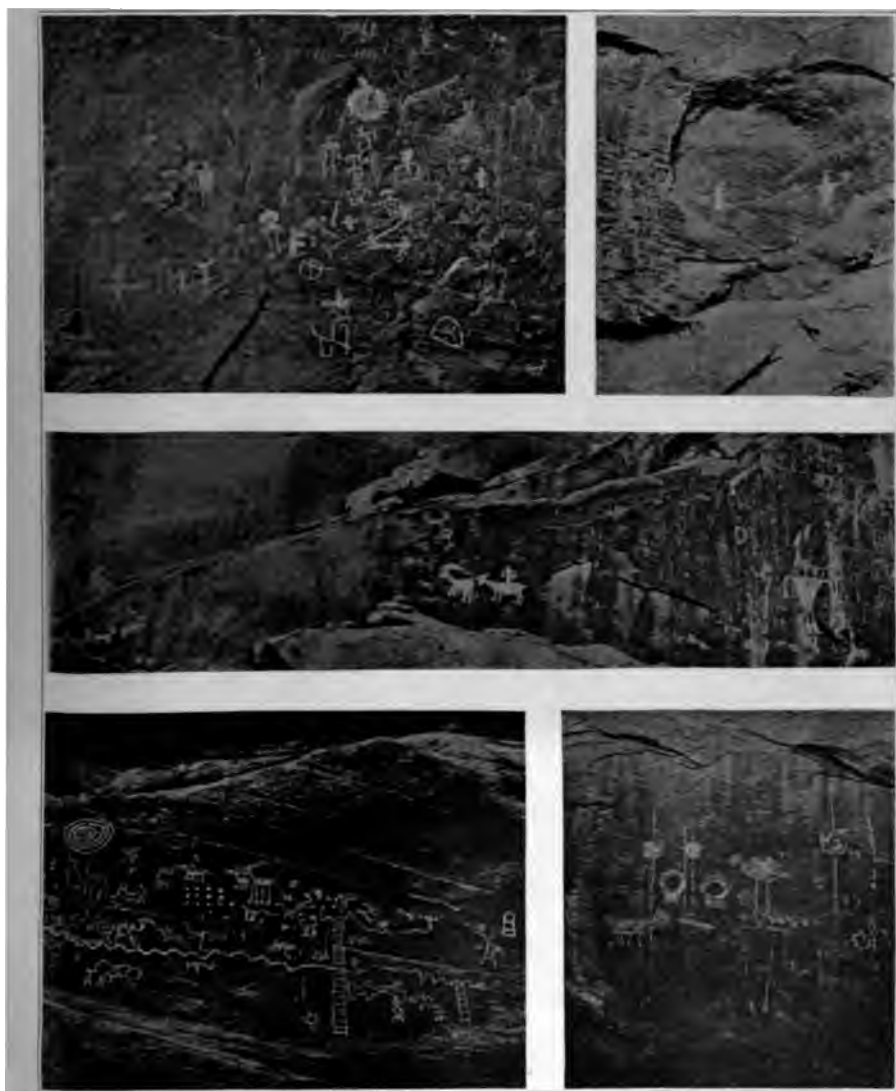
While the ruins are most abundant on the summits and in the canyons of the western segment of the Mesa Verde, there are several excellent cliff houses in the walls of the canyons entering the Mancos from the east.

The ruins of the Mesa Verde, together with the numerous small sites which are scattered along the banks of Mancos River below the canyon, are described in the superb work of Nordenskiöld³ and need not be considered here. The accompanying map (plate xvi)

¹ *Report of the (Hayden) Geological Survey for 1874*, published 1876, p. 369.

² *Tenth Annual Report of the (Hayden) Geological Survey, 1875-76*, published 1878, p. 393.

³ *The Cliff Dwellers of the Mesa Verde*, Stockholm, 1893



PETROGLYPHS FROM THE CLIFFS ON SAN JUAN RIVER AT THE MOUTH OF BUTLER WASH, UTAH.

shows the position of only the larger of the cliff houses and a part of the open ruins of the Mesa Verde, but the number and grouping of the smaller sites along the river are indicated.

RUINS IN MONTEZUMA VALLEY

A few miles west of the sharp western crest of the Mesa Verde rises the volcanic peak of the Sierra El Late, locally known as Ute Mountain ; between is a broad valley of erosion, called Montezuma Valley, draining in part southward into the San Juan, in part westward into the McElmo.

Low upon the eastern slope of the main peak of Ute Mountain lies the large ruin described and sketched by Holmes¹ and called Aztec Spring Ruin. This pueblo, the main part of which is somewhat more than four hundred feet square, can be justly compared with the ruin at Aztec on the Animas and with the great ruins of the Chaco. It is now much fallen. There is a trickle of water in one of the interior courts of the ruin, and water is usually abundant up the higher slopes of the mountain near by. There has been desultory digging in and about the ruin, but it is essentially intact and is situated on private land.

There are a few small scattered sites, as indicated on the map, in the valley between Mesa Verde and the southern spur of Ute Mountain ; a few far down on the southern and western slopes of the latter and a few high up among the piñons on its northeastern shoulder.

RUINS OF THE MC ELMO GROUP

The next great drainage area west of the Mancos is the McElmo, which heads against the long slope dividing the waters of the Dolores from those of the San Juan. The stream turns westward through a narrow valley — McElmo Canyon — having the volcanic Ute Peak on the south and the high escarpment of a lofty mesa on the north. The country falls away as the river runs westward, and after receiving from the north a great branch, now called the Yellowjacket, the McElmo turns southwesterly through a broken hill country to enter the San Juan about twenty-five miles below the mouth of the Mancos. The broad valley of the Mc-

¹ Loc. cit., p. 399.

Elmo, before it passes into the canyon at the northern foot of Ute mountain, contains a considerable number of scattered ruins.

There is a group of considerable size at the top of the Dolores divide near the great bend in the Dolores River, and some small scattered ruins on the piñon-clad McElmo slope southward. The group of ruins at the bend of the Dolores has been mentioned by several of the early explorers of this region, as it lay on the line of the old Spanish Trail.

The largest of the McElmo ruins form a group located on the Wolley Ranch in the upper part of the valley where it slopes against the Dolores divide. The main building standing in the open valley bottom is about one hundred and thirty-five feet long and was probably two or three stories high at the back. It faces a court and mound southward. The masonry is of superior grade. The ground-plan is not evident since the walls are much fallen and covered with soil and brush. One corner of the ruin has been washed out, revealing well preserved floor timbers. There is apparently a row of lower rooms underneath the débris, which may be intact. There has been considerable digging about the ruin, but it still offers a promising field for systematic work.

Another large ruin, called Burkhardt's Ruin, is at the head of McElmo Canyon. This lies about the head of a small rocky gulch, is also composite, and together with other ruins in this vicinity has been described by Holmes¹ and by Morgan.²

Aside from these larger structures there are many small ruins, mostly of the "unit type," scattered along the western base of Mesa Verde, upon the gullies which descend from the mesa to the McElmo, as well as a series of scattered ruins near the present town of Cortez. Near a small group of the ruins at the foot of the mesa is a reservoir formed by a high artificial earth dam built across a shallow wash.

A large proportion of all the burial mounds belonging to the ruins in the upper McElmo Valley have been despoiled, some completely, some partially; but nearly all with the usual aims of the curious or commercial pot-hunter.

¹ Loc. cit., p. 398.

² Loc. cit., p. 189.

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1, 2. Small cliff houses in Sand and Rock canyons—McElmo group, Colorado.
3. Site of small fallen ruins of the "unit type" in a piñon clearing on the high mesa east of Montezuma Creek, Utah.

As will be seen by the map, a series of ruins are scattered along the bank of the McElmo from the head of the canyon to the entrance of the Yellowjacket. These ruins are for the greater part of the small "unit type." Their burial mounds have been much disturbed. There are a few small cliff houses scattered along the valley. In the valley bottom stands the great detached "Battle Rock" about which the tradition of a great battle between the aborigines and the Utes has gathered.¹ Near by is an isolated rock around which numerous small houses have been built. These are now much thrown down.

Coming into the McElmo from the high mesa north is a series of short rugged canyons. Several of these, notably Sand Canyon and Rock Canyon, contain numerous small, well-built cliff houses (plate xxxii, 1, 2). On the west side of Sand Canyon the foundations of a house have been laid in a small cave and some loose stones are lying at the back of the cave; but the building has remained unfinished. There are a few painted figures upon the walls in these canyons. There are two fairly well preserved towers on a rocky bench to the east of the mouth of Sand Canyon, one of which is shown in plate xxiv, 2.

At the heads of two of these side canyons of the McElmo are large ruins built upon the edge of the cliffs and partially down the slopes. These ruins stand virtually upon the top of the great mesa bordering the McElmo to the north. One is known as the Goodman Point or Goodman Lake Ruin; the other is, so far as I know, without special name.

Goodman Point Ruin.—Goodman Point is the highest part of the great mesa which rises from the north toward Ute Mountain, breaking down abruptly into the canyon of the McElmo close against the northern slope of the peak. It is into the face of this tilted mesa that the series of short canyons above mentioned have cut their channels.

The Goodman ruins are situated about the head of one of these canyons. It is here a shallow rock wash or gulch with gradually sloping sides. The main ruin is built around the head of the wash

¹ For a rendering of this tradition and a brief account of a reconnoissance of this valley in 1874, by Jackson, see *Report of the (Hayden) Geological Survey*, 1876, p. 369.

in two parts, separated by the rock sag through which the drainage from above enters the gulch. There are two compact clusters of rooms facing each other across the narrow wash. One of these is over one hundred, the other more than three hundred feet long, and each consists of from four to six rows of rooms from twelve to fifteen feet square. I could not determine the number of stories in this ruin, though it is largely uncovered. The walls are now much fallen. It must, however, have formed a most imposing group of buildings.

Back of the main group of rooms and lying upon the slope on one side is another almost equally large building, apparently of another period of construction, with a burial mound between them. Several small isolated buildings stand about the main structure. Near by is a round enclosure with low walls, about sixty feet in diameter, having four small stone heaps set within and near the wall in such positions as to form the corners of a square. Such a structure I have not seen elsewhere. This ruin has not been much disturbed. The masonry, so far as it is exposed, does not appear to be of high grade.

About half a mile up the wash from the ruin lies the ancient artificial reservoir, not infrequently still containing water, which is called Goodman lake.

Unnamed Ruin on the Mesa West of Goodman Lake. — At the southern edge of the great mesa, a few miles west of Goodman Point and at the head of one of the short canyons leading down to the McElmo,¹ is a ruin of considerable size. Here, as in the Goodman Ruin, there are two large blocks of rooms separated by a wash. These blocks are several rooms deep and may have risen two or three stories. Behind one of the groups, distant about four feet, is a wall somewhat fallen but apparently originally three or four feet high. Two small cliff houses are placed beneath the overhanging ledge upon which one of the great houses stands. The dimensions of this ruin I failed to obtain, but it is considerably smaller than the Goodman Ruin.

¹ I am not certain upon which of these canyons this ruin is situated, since I have not descended at this point, but it is, I think, one lying between Trail and Mitchell canyons.

I have visited several small isolated ruins on the high mesa top between Goodman Lake Ruin and that last described, and there may be others since I have not yet fully explored this high, very rough, piñon-clad upland which lies between the McElmo and the Yellowjacket.

There is a large, much fallen ruin on a rocky slope at the junction of the McElmo and Yellowjacket. Several estufas are visible and there were many rooms, but the walls are much fallen. There is an opening among the rooms which leads into a narrow, sloping passage running down beneath the ruins toward the bed of the stream. This I have not explored. It is a curious and exceptional feature.

I have no record of ruins on the McElmo below the mouth of the Yellowjacket. A few small ruins have been reported to me along the district drained by the East McElmo. These I have not seen.

The McElmo is now for the larger part of the year a dry stream, the only water running in summer being that which is taken from the Dolores through a tunnel for irrigation purposes.

THE YELLOWJACKET GROUP OF RUINS

The Yellowjacket, which is the main tributary to the McElmo from the north, rises on the southwestern slopes of the Dolores divide, receives several tributaries from the north draining the high rough country which lies between the bend of the Dolores and the tributaries to Montezuma Creek, and enters the McElmo as the latter turns southwestward toward the San Juan. Neither the Yellowjacket nor its tributaries carry surface water except in the spring and for a short time after rains, but the open bottoms are in places arable.

The Yellowjacket is the stream called on Jackson's map¹ the Hovenweep; but the name Yellowjacket is now universally applied to it by the residents of this district, while one of the northern tributaries to the Yellowjacket is now called Hovenweep. I have used

¹ Map showing the location of ancient ruins in southern Colorado and Utah and northern New Mexico and Arizona accompanying the report of his reconnaissance in 1874, 1875, and 1877. *Tenth Annual Report of the (Hayden) U. S. Geological Survey.*

this revised nomenclature because it has already found currency on such of the local maps as have been made for surveying and other purposes.

The more important ruins, few in number and all small, in the lower portion of Yellowjacket canyon have been described by Jackson and need not be further mentioned here. Several small ruins are scattered along the valley bottom from the mouth of the Sandstone to three or four miles above the mouth of the Dawson. Throughout this region the canyon has a level and in places arable bottom, the walls rising from fifty to several hundred feet.

High on the northern bluff of the Yellowjacket, nearly opposite the mouth of the Dawson, stands a considerable group of ruins built partly on the edge of the bluff, partly down the upper portion of the higher slopes, with a series of tower-like structures (plate XVIII, 2), reaching down into the valley. This is one of the larger of the ruins which stand upon the mesa top overlooking the intervening country to the summit of Ute Mountain. There are two long buildings, each two to three rooms deep, separated by a shallow wash coming from the mesa top behind. One of the buildings is more than three hundred feet, the other nearly two hundred feet long. There are several *estufas* among the rooms along the slope. In a number of the rooms and buildings of the group, timbers are still to be seen, fallen in upon the ruins. A few feet behind both of the ruins, on either side of the wash, is a fairly well preserved wall built in zigzags, the arms of the zigzags being of unequal length—from six to twenty feet long. In the slight depression in the mesa top behind the wall is an artificial reservoir, about ninety feet across, formed by a low dam of earth.

At the head of Yellowjacket Canyon where its walls are only a few feet in height, on a narrow tongue between two branches and near a spring, are the so-called Yellowjacket Spring ruins. They are on the line of the old Spanish Trail and are frequently mentioned by the early explorers in this region who called them by the Indian name *Surouaro*, which according to Newberry¹ signifies "desolation."

The main ruin consists of a series of five clusters of irregularly disposed houses, in part closely crowded together and conforming

¹ Loc. cit., p. 88.

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in most instances to the "unit type" or to variants of this. Though close together, each house has its own estufa and burial mound lying southward. The lateral wings of many of the houses are long, sometimes enclosing a court containing several estufas.

Several of the houses are modified by the introduction of a round tower. In some a low wall unites the prolonged lateral wings enclosing the small court of the estufas. Most of the walls are largely fallen. I estimate that this village contains in all its various buildings not fewer than three hundred rooms. There are several buildings of irregular shape, one of considerable size, at the edge of the canyon above the main group.

The burial mounds of this village are large and conspicuous. A thin stone slab was laid over many of the bodies or the latter were enclosed in a loosely laid stone cyst before being covered in their graves.

Few of the mounds have escaped the hands of the destroyer. Cattlemen, ranchmen, rural picnickers, and professional collectors have turned the ground well over and have taken out much pottery, breaking more and strewing the ground with many crumbling bones.

While the scientific value of these ruins has been thus seriously impaired, they still remain of much interest on account of the modification in form which the primitive building fashion here shows, due, as it seems to me, to the limited surface on which the large number of houses of the "unit type" were crowded.

RUINS ON THE TRIBUTARIES OF THE YELLOWJACKET

There are several short canyons draining the high country between the McElmo and the Yellowjacket, most of them heading abruptly in cliffs of varying height. In some of these, as well as in the tongue-like mesas between them, are ruins, some of the "unit type," some towers, some irregular clusters of houses on the edges of the cliffs, and a few small cliff houses. Only a part of these side canyons to the Yellowjacket from the south are named. The ruins at the head of the first above its mouth, called Cannonball Canyon, are the best known and most noteworthy (plate XXII). They are of the type especially characteristic of this region, being irregular clusters of rooms, often associated with towers, built around the heads of shallow gulches.

The longer tributaries to the Yellowjacket rising in the country to the north, are named, commencing at the lowest, Ruin, Bridge, Hovenweep, Nigger, Sandstone, and Arch Rock canyons. Most of them start in broad drainage basins, with moderate fall, running thus for several miles down the long slopes of the Dolores divide. Then they break suddenly at the abrupt head of a rocky gorge, which in some cases continues thus for several miles, in others open out here and there into arable intervalles from half a mile to a mile wide. Most of these tributaries are rough walled and narrow canyons for a few miles above the junction with the Yellowjacket, and in these portions there are few ruins. Such as exist are small and inconspicuous, consisting of single rooms and small clusters.

The first three of the northern tributaries to the Yellowjacket, Ruin, Bridge, and Hovenweep canyons contain the most interesting and noteworthy ruins; those in the upper valley of the Nigger and Sandstone, and those along the edges of Arch Canyon being small valley ruins of the "unit type," or small rooms and towers perched upon the edges of the narrow canyon cliffs.

On the two terminal branches of Ruin Canyon are noteworthy groups of ruins consisting of towers and larger and smaller buildings, some skilfully built upon isolated rocks (plate xxiii).

The lower eight miles of Bridge Canyon contain no noteworthy ruins, but there are clusters of well-preserved buildings on both forks where the canyon boxes. Here are several well-preserved towers and rooms and clusters of rooms close upon the edge of the cliff. This region is locally known as the Hawkberry. A spring trickles out in a shallow cave in the canyon bottom near the ruins.

There is a long line of ruins of the "unit type" on the height of the great mesa which extends northward between the headwaters of Bridge Canyon and those of the Hovenweep. These are situated from a few rods to over a mile apart. No water supply is evident on the top of the mesa, but the small side canyons which may contain water are not far away.

The Hovenweep runs for the last twelve miles of its course in a low-walled canyon in which are few ruins, but above this point it opens out into a level valley with several small accessible springs. In this valley along the cliffs (plate xxiv, 3), upon the high mesas on

either side, and upon its short tributaries are several small ruins and a few large clusters. There are several towers here. One of these (plate xxiv, 1), with a group of fallen walls about its base, stands in the valley bottom and forms a conspicuous feature in the meadow landscape, about three or four miles above the upper end of the canyon. There is a small ruin on the crest of the ledge east of this tower.

Less than a mile below this tower a small gulch enters the Hovenweep from the west. A short distance up this side gulch is a small spring and near by a group of ruins on a projecting point at the forks of the valley. The ruins are in two groups, each of which must have contained at least fifty rooms. The walls are much fallen, but in places stand so high as to justify the belief that the buildings must have been two or three stories in height at the back. No burial mound could be discovered. There are two ruins among the piñons on the mesa top west of this group, one of which is about one hundred and seventy-five feet long with a large undisturbed burial mound. The other ruin near by is small.

Far up the Hovenweep are two considerable ruins facing each other across the valley. The ruin on the west side is a rambling mass of rooms built upon a projecting rock crest high above the bottom and extending partly down the slope. The ruin on the east side of the valley is built mostly upon a low, narrow, projecting tongue of rock. The grouping of the rooms appears to be wholly irregular. The main group consists of some twenty rooms averaging ten feet square, while a considerable area on the southern slope is covered with fallen walls. A low wall runs across the base of this rock tongue, barring access to the ruin from the back. No burial mound was discovered in the vicinity.

Just above this ruin is a well-defined artificial ditch, evidently designed to conduct water from the next draw above around the intervening spur to the vicinity of the ruin. On the hillside across which this conduit runs are constructed a series of reversing zig-zags which were apparently designed to turn the water abruptly back at short intervals so as to lead it by gradual stages down the slope to the point of delivery.

The burial mounds in many of the widely scattered ruins of the Yellowjacket group have been partially dug out in search for pottery.

RUINS IN PIÑON CLEARINGS

It is especially upon these great piñon-covered uplands of the Yellowjacket and Montezuma Creek region that one encounters a feature in the environment of these ancient dwelling places which is interesting and may be of significance in the determination of their period of occupancy. I refer to the situation of many of the ruins in larger and smaller sharply outlined clearings in the piñon timber.

These clearings (plate xxxii, 3) are now mostly overgrown with sage-brush and other low shrubs which cover the burial mounds, usually leaving free only the ruins themselves and the shallow pits of the estufas. The clearings vary in size, but in general correspond to the size of the ruin. Thus a ruin of the "unit type" with one or two estufas and from four to eight rooms on the back is usually surrounded by a clearing from fifty to one hundred yards across, while larger clusters of ruins have proportionately larger spaces about them.

This condition seems to me to be of significance in its bearing upon the probable age of these ruins. Two possibilities are evident in this connection. The clearings may have been made in the piñon forest to make room for the buildings and the necessary space about them. Or, on the other hand, the piñon growth may have taken place since the construction of the buildings, sparing their immediate surroundings because the solid trampling of the ground about them has rendered a limited area unfitted for the growth of piñon seedlings. I have observed this condition only in the ruins of the older and simpler type which, as judged by large burial mounds, have been long occupied.

How solidly trodden the earth may become about old habitations of similar people is well known to those who are familiar with the Southwest and its present aboriginal residents. Furthermore, this is a region in which the soil in many places is still forming over the bare rock surfaces, so that many of the piñon uplands are doubtless now for the first time timber clad.

Rarely in these clearings, though occasionally elsewhere, piñons of considerable size have grown close about and even in and upon the ruins of the older type.

I have not been able to form a definite opinion as to the significance of these open sage-brush clearings in the piñons, which invariably contain ruins. They occur in densely clad piñon regions where, save for these and some of the natural sage-clad meadows in the ground sags of the upper water-courses, the piñon timber stretches uninterruptedly for miles.

RUINS OF THE MONTEZUMA CREEK GROUP

Montezuma Creek drains the great barren upland lying between Dolores river and Abajo Mountain, as well as the eastern slopes of the latter. It is an arid and forbidding country, covered mostly with sage and piñon, and with but few and widely-scattered watering places. On these great uplands, drained by the eastern tributaries of the Montezuma, there are, as the map indicates, few ruins.

There are a few small scattered valley sites and small cliff houses along the upper branches of Cross Canyon and a few in the lower reaches of Cross Canyon, commonly known as East Montezuma. I have ridden over the northern part of this region and am assured by reliable cattlemen who have long ranged these uplands that there are few if any ruins, and these small, on the southern ends of the great mesas which lie between the eastern tributaries of Montezuma creek: namely, Cross, Pierson, Bug, Coal-bed, Horse-head, and Boulder canyons. Along the upper reaches of these mesas, however, which I have explored, there are a few small ruins, partly in the narrow canyon bottoms, partly upon the tops of the mesas.

Two of the ruins in this region are large and in many respects noteworthy: one lying about the middle of the mesa between Dove Creek and Pierson Canyon, locally known as the Pierson Lake Ruin; the other on the mesa between Pierson and Bug Canyons and known as Bug Lake Ruin. These ruins are some distance away from the regular trail across the country from east to west and are little known.

The Pierson Lake Ruin.—This ruin is situated upon the lofty piñon- and sage-clad mesa which rises between Cross and Pierson canyons and is in direction a little north of west of the point at which Dove Creek enters Cross Canyon.

The so-called Pierson Lake is a surface of bare, sloping rock upon the top of the mesa of some two acres in area, around the lower parts of which an artificial dam of earth has been made. This dam, in the form of a broad embankment, is from four to six feet high, is well preserved, and gives no evidence of modern repair. The reservoir thus formed receives the drainage of a higher slope of earth and rock, so that a considerable amount of water is still to be found here for a part of the year — a circumstance of great advantage to cattle-herders in this district. Close beside this reservoir are two ruins of the "unit type," each with several rooms along the back, short wings, and one estufa. The mesa about the lake is covered with piñons.

The Pierson Lake Ruin, a short distance from the lake, presents a rather imposing mass of fallen stones, in which, however, the general form of the walls may be made out. The ruin faces southward upon a shallow surface water-course. The building had, I should judge, between two hundred and fifty and three hundred rooms. These are quite irregularly arranged, but in general formed a compact group about three hundred feet square. At one side of the building the rooms are arranged in a series of long rows, closed at the back and apparently forming a group of narrow courts opening southward. At the other or western side the rooms are built without evidence of significant arrangement in a compact mass. Between these two portions of the ruin runs a passageway opening southward upon a small court in which is a burial mound. Another burial mound of considerable size lies to the west of the ruin. A small isolated building stands southeasterly across the dry wash on which the ruin fronts. The masonry of this ruin, so far as one can see, is rather carelessly laid, and the walls do not appear to have been of great height.

About three hundred yards west of the main ruin in a piñon clearing is another ruin about one hundred feet long at the back, with short wings at the ends and a row of probably nine estufas between the wings. This ruin is much fallen, and there are so few building stones about the site that it seems not unlikely, considering the large size of the ground-plan, that they have been carried off for use in the large pueblo which is apparently of much more recent construction.

On a low ridge northwestward of the large pueblo a few hundred yards, in a sage-grown clearing in the piñons, are several small ruins scattered up the slope. These are much fallen and overgrown with sage-brush; but they are clearly of the "unit type" and stand as isolated structures. Apparently none of the burial mounds in this group has been disturbed.

This entire group of ruins is now surrounded by the piñon forest save in the immediate vicinity of the buildings, and has an outlook only toward the Sierra Abajo. There is no living water apparent near the ruin, but Pierson Canyon and Dove Creek are not far away and in these water may be found. There are a few small ruins scattered over this mesa north and east of the Pierson group.

Bug Lake Ruins.—These ruins stand upon the high mesa between Pierson and Bug canyons in a direction easterly from the Pierson group which in many respects they resemble.

Bug Lake is, like Pierson Lake, an artificial reservoir about one hundred and fifty feet across, formed on the sloping bare rock surface of the mesa by a dam of earth from three to five feet high. Like Pierson Lake also the water still gathers in it during rains and it likewise is used by the cattlemen.

The ruin is about one-eighth of a mile southeasterly from the lake. The main ruin is composed of two groups of buildings facing one another across a small water-course. Many of the walls are standing several feet in height, the outline of the rooms being plain. Many timbers of roofs or floors are still present among the fallen walls, but are much weathered. The larger portion of the ruin forms a fairly compact mass facing southeasterly. It is about four hundred and fifty feet long and apparently must have contained some three hundred or more rooms. The general arrangement of the rooms is that of small, rather irregularly placed groups of circular estufas, each group surrounded by a somewhat irregular mass of rooms. These groups are ranged side by side, some of them being separated by narrow passageways leading from the back to a court on the southeast of the pueblo about sixty feet across, which contains a burial mound. One end of the great building seems to be much more weathered and of older construction than the other and is surrounded at the back by a low wall. This wall

a few feet away from the building may have been three or four feet high. It is now much fallen.

Across the wash from the large pueblo are several smaller isolated buildings. Two of these buildings stand about forty feet apart on ground which slopes toward the wash, and between these buildings an artificial dam has been thrown, forming a reservoir of considerable capacity, receiving the drainage from the piñon slope behind the buildings. There is also, still largely intact, a dam across the shallow wash upon which this group of ruins stands, capable of holding a large amount of water upon the gentle slope of the stream-bed above.

To the westward of this main ruin, two low gravel benches, each a few feet in height, rise one behind the other. The piñons are cleared upon these benches over an area of about five hundred yards in length and from two hundred to three hundred yards in breadth. The clearings are covered with sage-brush.

On the first of these benches, perhaps two hundred yards from the main ruin, is a group of at least five isolated buildings of the "unit type." Each has one row of rooms at the back, short wings, and from two to four estufas. While somewhat irregularly placed, they all face southward. I discovered only one burial mound in this group, which is at the front of the group near the southern edge of the bench. The buildings are all much fallen and dirt-covered. The estufa pits are circular and are now from two to five feet deep at the middle. There are fewer building stones here than is usual in ruins of this size.

On the second bench is another group of widely scattered houses of the "unit type," each with two or three circular estufas. I found in this group separate burial mounds scattered among the houses. These had been slightly dug into here and there but not seriously injured.

This Bug Lake group of ruins seems to me, especially when taken in connection with the Pierson group, to be of peculiar interest because it confirms the impression of different periods of occupancy of a site which has been advanced upon a previous page. There are here upon the upper benches, ruins of the old "unit type" — rectangular, short-winged, with circular estufas in the

court. On the highest bench the burial mounds are separate for each house, while upon the lower, so far as I was able to discover, there is but a single mound for the whole group of dwellings. The ruin situated upon the wash, on the other hand, shows the massing of rather atypical individual clusters of rooms and estufas to form a large and fairly compact pueblo with a burial mound in the southward-looking court. It would be of great interest to know from systematic excavations what a comparative study of the burials as well as of the ruins might reveal as to the relationship in time and culture of these associated ruin groups.

There are a few small ruins on the mesa between Bug and Coal-bed canyons, along an old trail leading down to the valley of Montezuma Creek.

RUINS IN MONTEZUMA CREEK VALLEY

The long, narrow valley of Montezuma Creek is dry a large part of the year save near its sources in the mountains and in a few places here and there where the underground flow comes to the surface in the sandy stream-bed. But the alluvial bottom is in many places arable from natural deep irrigation or the seepage from side canyons.

The general character of the ruins has already been indicated by Jackson in his early report. They are mostly of the "unit type," standing on the alluvial bottom or on the low cliffs at the sides. They are most abundant in the middle third of the valley where in places they are very thickly clustered along the stream-bed. Some of them are much washed.

I have not been able to find or hear of ruins, other than a few small sites, on the slopes of the Sierra Abajo above the mouth of Boulder Creek.

Here and there in the valley are buildings of considerable size, and there are several fortified rocks and small isolated houses.

At the entrance of the Coal-bed Arroyo stands an isolated butte about fifty feet high, having a flat top of two or three acres in area. The top and sides of this butte, which is known to the modern frequenters of Montezuma Creek valley as the "Island," are covered with a series of irregular and complex buildings. A few feet outside of one of these buildings is a row of stone slabs set five to six

feet apart. They are still mostly erect, standing from four to six feet high. They are from six to seven inches thick and from fourteen to eighteen inches wide. A lower, loose stone parapet, in places intact, is built in between these slabs, the whole forming a continuous wall barring access to the ruins upon this segment of the butte. Another wall of similar character, but less well preserved, is placed in a like defensive position at the opposite end of the butte. At one side, where the cliff is most abrupt, a well-built and still fairly preserved stone trail leads to the top. Commanding the turns of this trail from several points are flat projecting rocks on which are still piled heaps of rough stone, not belonging to buildings. These I conjecture to have been placed here for defensive uses. Barring projectiles, a few men placed at these stone heaps could most effectively prevent access to the top. There is much broken pottery about this ruin.

At several other places in this valley large stone slabs have been used in construction. Two instances of this are described and figured by Jackson.¹

One of the largest of the valley ruins is east of the stream-bed between the mouths of Bug and Pierson canyons. This ruin measures about three hundred and seventy-five by one hundred and ninety feet. There were probably over two hundred and fifty rooms and ten or more circular *estufas* irregularly placed. The ruin and burial mound have been much disturbed by excavation.

At the upper part of the residential portion of Montezuma Valley, where for a considerable distance the alluvial bottom is wide and the stream water near the surface, small ruins of the "unit type" are numerous. Near the upper end of this group, near the arroyo and partly washed out, is a compact group of ruins about three hundred feet long, in which the remains of from six to eight *estufas* and over forty rooms are visible. The burial mound is large.

At the mouths of several of the small creeks running into the Montezuma from the high mesa on the west are small valley sites with a few small cliff houses. There are also a few small ruins on the mesa tops between the upper reaches of Devil and Alkali canyons.

¹ Loc. cit., p. 428.

At the head of the short canyon north of the Alkali, which I have called Jackson Canyon, is a large ruin formed of two buildings facing each other across a shallow wash. Each building consists of an irregular mass of rooms about two hundred feet long, with low towers among them (plate XXI, 1). I estimate this ruin to have contained over one hundred and fifty rooms. The burial places were not discovered.

There are scattered pictographs in several places along Montezuma Valley.

A considerable proportion of the ruins and burial mounds have been devastated by relic seekers, although many still remain intact.

RUINS ON RECAPTURE CREEK

The reconnoissance map of the United States Geological Survey is inaccurate in regard to the source of Recapture Creek. On the map this rises only a few miles above the San Juan, whereas, in fact, it is the great drainage stream for the southern slope of Abajo Mountain. The government map carries the drainage of this region into Montezuma Creek, which is incorrect. The lower portion of the Recapture, like the Montezuma and the Cottonwood, is a dry wash with underground flow for most of the year.

The Recapture rises at the base of the high peaks with rapid descent and, after union of the main tributaries among the higher foothills of the mountain, runs through a well watered open park several miles long, and then enters a rough, narrow, and tortuous canyon with precipitous walls. Here for a few miles are numerous ruins, mostly small cliff houses and small valley sites showing nothing unusual in type. Farther down the stream the canyon walls are lower and the bottom widens. Here and there are a few small and scattered sites. Some twenty miles above its mouth, small sites are clustered and are strung along the valley bottom for several miles, as is indicated on the map. Thus the valley sites and the cliff houses of the Recapture while fairly numerous are nearly all small.

There are, however, a few ruins of considerable size. One of these, situated a short distance above the point where the Bluff-Monticello road leaves the Recapture, contains from thirty to forty rooms.

Another ruin, two or three miles below the mouth of Mustang Spring Canyon, stands upon a rocky point above and west of the arroyo, and consists of three groups. The largest of these, a boulder site, is about one hundred and eighty feet long and much fallen; another is about sixty feet long; while the third, back of these and apparently of older construction, is formed of scattered buildings whose outlines are not well defined. There are large mounds, but little dug, associated with this ruin.

Most of the burial mounds along the lower reaches of Recapture Creek have been dug in desultory fashion for commercial purposes.

RUINS ON COTTONWOOD CREEK

Cottonwood Creek, which enters the San Juan at the present Mormon town of Bluff, is a long stream draining the western slopes of the Abajo Mountains. Its sources are incorrectly indicated on the Geological Survey map, where they are represented as draining into Butler Wash.

The lower reaches of Cottonwood Creek are low-walled and contain a few small valley ruins and small cliff houses. Commencing some twenty miles above the mouth, the valley sites, mostly small, become more numerous and are scattered along the bottom for several miles. One ruin on a high gravel bench below the mouth of Dry Wash contains from fifty to sixty rooms.

In branches of the Cottonwood near its sources — Allen, Hammond, and Cottonwood canyons — are numerous cave-like recesses in the cliffs bordering the valley. Several of these are at the level of the alluvial bottom. In some of these caves no ruins are visible; in others small cliff houses or remnants of such are present. It is in these caves, and sometimes when these are present beneath the walls of the ruins, that the burials of the so-called "basket makers" have been found by Wetherill, Lang, McLloyd and Graham, and others. Many relics of these ancient people have been taken out of the caves in this region, some of which, under the auspices of the Hyde Exploring Expedition, have been placed in the American Museum of Natural History in New York City.¹

¹ See Pepper, "The Ancient Basket Makers of Southeastern Utah," Supplement to *American Museum Journal*, vol. II, No. 4, April, 1902.

There are a few small ruins on the high mesa between the Recapture and the Cottonwood at the foot of the Abajo Mountains, and there are said to be a few scattering sites, which I have not seen, southward along the mesa.

RUINS ON BUTLER WASH

Butler Wash is a narrow, dry, shallow valley, having on its western side the sloping uplift of a great fault. Along the eastern base of this slope is a series of small valley sites mostly situated at the mouths of short canyons coming from the slopes of the uplift. In many of these canyons are larger and smaller caves containing cliff houses and burials. One of the caves far up the valley, which is very large, formerly contained a large ruin and many burials. The burial mounds in Butler Wash have been much devastated. Some of them have furnished relics of the "basket makers." In the upper reaches of the Butler there are no noteworthy ruins. There are a few painted pictographs in some of the caves.

RUINS ON COMB WASH

Comb Wash was formerly called Epsom Creek ; but it is now so universally known by the former name that I have retained it on the map. The valley, from one to five or six miles wide, is shallow and dry and is bordered on the east by the serrated summit of the great fault which, running from the divide between Abajo Mountain and Elk Ridge, turns southwesterly, crossing the San Juan, and runs in the direction of Marsh Pass. On the west the country rises from the valley of Comb Wash in lofty brown and barren swells up to the high mesa at the foot of Elk Ridge. There are a few small ruins at the mouth of Comb Wash ; then up the stream for several miles there are none. Near the head of the valley are several scattered sites. Some of those in the valley bottom and on the tributaries from the west are mentioned by Jackson. They are mostly valley sites, with a few small cliff houses in the side canyons of Elk Ridge.

RUINS IN GRAND GULCH

Grand Gulch is the westernmost of the large northern tributaries to the San Juan. It heads in the long mesa slopes south of Elk Ridge, the canyon breaking high up and descending rapidly. The

canyon is narrow and tortuous, with walls several hundred feet high. Water is usually to be found in places throughout the year. The area of arable bottom is small.

The greater part of the ruins, as indicated on the map, are clustered at and below the main forks of the canyon. They are mostly in large caves, the ruins themselves being for the greater part quite inconspicuous. But here and in the country at the head of the Cottonwood and in some of the caves of Butler Wash, have been found most of the relics of the so-called "basket makers." They are often buried beneath such ruins as are visible.

There are many pictographs, both graven and painted (plate xxxiii, 1), on the walls of the cliffs and caves of Grand Gulch.

In one instance, the spiral figure, either carven or painted, so frequent throughout the entire region, is here made while it was yet soft upon a thin disk of adobe plastered on the face of the rock (plate xxxv, 1).

Excavations have been extensively carried on in the caves and among the rocks of Grand Gulch, and a large amount of material has been removed. Much of this is in the Hyde collection in the American Museum of Natural History, while some is in the Field Columbian Museum in Chicago.

The high mesa country on either side of Grand Gulch is dry and forbidding, and I have not found nor have I been able to get information of any considerable ruins here.

Beyond Grand Gulch the vast tract to the west and south of Elk ridge, reaching to the Colorado River, is high, waterless, barren, and much broken by rugged canyons which penetrate from the Colorado. I have been down White Canyon to Dandy Crossing, and my guide, Clayton Wetherill, has traversed the country south and east. With the exception of a few small ruins near the mouth of White Canyon and a few cliff houses near the Colorado River not far from Hall's Crossing, we have not found evidences of dwellings.

RUINS ON THE SOUTHERN TRIBUTARIES OF THE SAN JUAN

Along the easternmost of the southern tributaries of the San Juan which come from the high broken country forming the Continental Divide, there are no ruins so far as I have been able to dis-



1. Petroglyphs from the wall of a burial cave in Grand Gulch, Utah.
2. Petroglyphs painted on the cliff near a shallow burial cave ("Princess Cave"), Grand Gulch, Utah. Faint outlines in white of the entire figure to the left may be made out, with spreading head ornaments.

cover. I have heard from three sources of two or three small ruins in Gobernador Canyon, but have not visited them. I have traversed the eastern tributaries to Canyon Largo, called on the government map *Compañero*, but now known locally as *Carriso Canyon*, finding a few small scattered valley sites and cliff houses in positions indicated on the map. On the upper reaches of the valley there are several fairly well preserved pictographs (plate xxxv, 2) associated with small ruins. I have neither found nor have I been able to learn from cattle and sheep men of any ruins on the high mesa lying between *Compañero* and *Largo* canyons. There are two small ruins at the entrance of the *Tapacipa* into *Canyon Largo* and two small ruins farther up the small valley coming in from the west. Below this point I have found none in *Canyon Largo*. I have not personally examined the upper reaches of the *Largo*, which runs for many miles to the southeast; but have heard of a few small sites from those who have followed the canyon to its head. I have traversed the entire length of *Canyon Blanco*, finding no ruins.

The great stretch of high mesa country lying between *Canyon Blanco*, the *Chaco*, and the *San Juan* is almost wholly devoid of ruins. The country is very dry, save for temporary pools upon the level summits after a rain, is high and open, and lacks such sheltered valleys as are characteristic of the sites of most of these ancient pueblos.

RUINS ON THE CHACO

The ruins of the *Chaco* region are largely confined to the middle portion of the eastern branch. One large ruin (*Pueblo Pintado*) lies near the stream far up the valley, but most of the others are clustered, as indicated on the map, above the mouth of the *Escavada*. These ruins, the first authentic account of which was given, with sketches of some of the buildings, by Lieutenant Simpson in 1849,¹ were described in detail with outline plans of the great pueblos by Jackson in 1877.² The description and plans of Simpson and Jackson are largely reproduced by Morgan.³ These drawings of the great *Chaco* ruins made by Simpson and Jackson, while

¹ *Report of the Secretary of War*, 31st Congress, 1st Session, Doc. No. 64.

² *Tenth Annual Report of the (Hayden) U. S. Geological Survey*, 1878, p. 431.

³ *Houses and House-life of the American Aborigines*, 1881, p. 155.

admirable records of a hurried examination, are not to be taken as accurate in detail, since all of the ruins at the time of their visits, as at present, were much fallen and covered with masses of débris.

They form the most impressive and noteworthy group of buildings on open sites in the entire San Juan district. With the exception of the ruin at Aztec on the Animas, these several-storied structures present more massive piles of masonry and more standing walls than any others, and mark the attainment of considerable constructional skill on the part of the old house-builders (plates XIX, XXVI).

These ruins remained practically untouched until the careful and systematic excavation of one of the largest — Pueblo Bonito — was begun by the Hyde Exploring Expedition. This work has already been most fruitful in the development of our knowledge of prehistoric aboriginal life in America which is of the highest interest. The large and valuable collection of material from this ruin is deposited in the American Museum of Natural History in New York City, where, under the immediate charge of Mr George H. Pepper, the accomplished Assistant in Southwestern Archeology, it is being classified and studied.

It is not necessary for the purposes of this paper to further dwell on the group of ruins of the Chaco region, since they will no doubt be presently described in full as the result of the explorations of the Hyde Expedition. It should, however, be said that, as indicated on the map, the ruins of the Chaco Valley at this point are by no means confined to the great communal pueblos which have attracted most attention. As the map shows, a large number of small open sites, many of them presenting the "unit type," are scattered about the edges of the valley, more particularly on its southern side, and strung along the high mesa to the north. There are numerous scattered pictographs on the cliffs of this part of the east branch, sometimes called Chaco Canyon.

The valley bottom in the vicinity of the great group of ruins is level, and in many places arable; and while in summer the stream-bed is mostly dry, a little digging through the sand exposes here and there an abundance of ground water of excellent quality.



PICTOGRAPHS PAINTED NEAR BURIAL CAVE ("PRINCESS CAVE"), GRAND GULCH, UTAH.

Three large pueblos are situated, as indicated on the map, along the course of the Kin-be-ni-o-li, one of the great southern tributaries to this arm of the Chaco. There are a few small sites close under the mesas to the south of this portion of the Chaco valley—that region overlooked by Hosta Butte. There are also a few small ruins scattered along the bottom of the east branch of the Chaco below the mouth of the Escavada Wash. The main wash of the Chaco runs through a broken, dry, and barren region, and from its sources to its junction with the San Juan there are, so far as I know, no noteworthy ruins, with the exception of a group of considerable size at the lower end of the river and one small site near the mouth. Along the benches of the washes coming into the Chaco from the foot-hills of the Luckachucki and Tunitcha Mountains, there are a few scattered and for the greater part small sites. One of the largest and most interesting of these is on a gravel bench four or five miles north of Sheep Spring. Here are two main groups: one, one hundred and fifty feet long; the other about two hundred and twenty-five feet long. On the valley bottom south of these are several sites, mostly sand-covered.

Going northward along the foot of the range here, one comes, as the map indicates, upon small scattered sites. Another large group, with abundant water supply, is situated near Mitten-rock. Near the latter is a curious collection of small, square enclosures with low stone slabs about them. There are a few small sites in the vicinity of Ship-rock, several, also small, in Black Horse Valley between the Luckachucki and the Carriso Mountains, as well as a series of small sites strung along the southern and eastern foot-hills of Carriso Peak.

RUINS OF CHIN-LEE VALLEY

The most important group of ruins in the Chin-lee watershed is to be found in Canyon de Chelly and its tributary, Canyon del Muerto. The general character of the ruins here, in part in caves in the cliffs, in part in the form of valley sites, has been described at length by Mindeleff.¹ There has been comparatively little digging in and about them except in the so-called Mummy Cave in the Canyon del Muerto, which has been extensively ravaged.

¹ *Sixteenth Annual Report of the Bureau of Ethnology*, 1897, p. 79.

The number and grouping of these ruins on my map is largely based on Mindeleff's chart. The space, however, has not permitted the distinction between cliff houses and open sites which is indicated on the map in most other regions of the watershed.

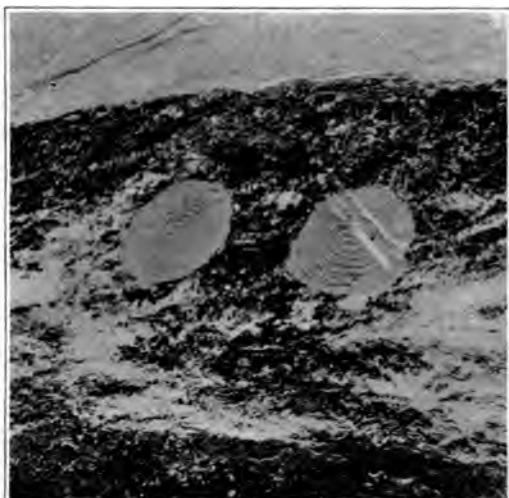
I have explored nearly to its sources Nashlini Creek, which enters the Chin-lee above the mouth of the Canyon de Chelly. There are near its head two or three small buildings on the edges of the cliffs and two small cliff-houses. There are also several small houses in a canyon opening into the Chin-lee, a short distance south of the mouth of Canyon de Chelly. On the western side of the upper reaches of Chin-lee Valley, against the eastern foot-hills of Zilh-le-jini Mesa (Mesa La Vaca), are a few small ruins—cliff houses and small valley sites—near small springs and water-holes. Some of these I have visited. I have been told by the Navahos that a few similar small sites are scattered near the mouths of the small canyons which emerge from the northern face of the mesa, also near springs. In two of the small canyons below the mouth of the Canyon de Chelly are a few small cliff houses.

A thorough exploration of Carriso Creek to its sources shows a few small boulder sites scattered along the stream from its issuance from the foot-hills to its entrance into the Chin-lee. None of these ruins is large. Those in the upper reaches are altogether valley sites. Lower down there are a few cliff houses.

The next stream entering the Chin-lee from the east drains a high, arid valley at the foot of the upper end of Luckachucki Mountain, north and east of the Hospitito Spring and Los Gigantes Buttes. On the eastern wall of one of the main canyons in which this stream heads are several small ruins in caves. The buildings in these cliff caves are for the greater part small and inconspicuous. The general appearance of the caves and of the ruins, which have been "prospected" by several parties, is similar to those of the Cottonwood and Grand Gulch north of the San Juan in which the "basket makers'" relics have been found. The stream draining this region, so far as I know not hitherto named, I have called Hospitito Creek.

On the main Chin-lee stream, between the region near the mouth of Carriso Creek and the San Juan, are a few widely scattered

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1. SPIRAL FIGURES MADE ON A THIN COATING OF ADOBE ON A WALL OF A SHALLOW CAVE, GRAND GULCH, UTAH.
2. PETROGLYPHS ON A FALLEN ROCK IN COMPANERO CANYON, COLORADO.

ruins. About a mile above the entrance of Carriso Creek, at the bottom of the low cliffs which here border the valley, are several shallow caves in which are remnants of considerable buildings. The burials in these ruins have been to a moderate extent disturbed. For a few miles below the mouth of Carriso Creek the canyon is narrow and the walls precipitous, the surrounding country in the main being bare rock. A few miles below the bottom of the canyon widens, and there are several small ruins scattered along in low caves or as small valley sites. The situation of these is indicated on the map. Some of them are mentioned in Jackson's report.¹

A couple of miles below the mouth of the Gothic Wash the Chin-lee turns abruptly northwest through a narrow break in the hills, and here, where the water when the stream is flowing falls over a high ledge, there is a considerable ruin on the edge of the cliff and a large cave ruin a few hundred yards to the north. There are several cave ruins and valley sites between this point and the mouth of the San Juan which have been described by Jackson. There are a few pictographs in the caves of the lower Chin-lee Valley. The burials in and near the ruins of this part of the valley have been extensively dug and large collections of pottery have been removed.

I have explored the entire length of the Gothic Wash, the main canyons in which it heads against the Carriso Mountains, and the neck between the latter and Luckachucki. In the lower reaches of the Gothic Wash there are a few small sites, none of them noteworthy either in size or character. It is not until one approaches the heads of the short, rough side canyons against the shoulder of the mountain that he finds many ruins. Here, as indicated on the map, and especially in the southernmost fork of the Gothic Wash, are numerous small cliff houses and a few bottom sites. The most noteworthy of the cliff houses is in a large cave close under the mountain, some eighty feet above the rough chasm and almost inaccessible. There are several small buildings here and a largely intact estufa with a still well-preserved wooden ladder leading down into it. This ruin had apparently remained undisturbed until a few days before our visit, when a Navaho had, by deepening the old steps in the rock, climbed up and disturbed one or two of the burials.

¹ Loc. cit., p. 420.

There are numerous groups of pictographs along the upper reaches of the Gothic Wash, both upon the walls of the caves and upon the open faces of the cliffs. These are most abundant near the mouths of the side canyons which contain the ruins. In general the burials in this fork of the Gothic Wash have been but little despoiled. I found no evidence of noteworthy ruins in the northernmost forks of the Gothic Wash.

The great region between the Gothic Wash and the San Juan River and between the Chin-lee and Four Corners, where Utah, Arizona, Colorado, and New Mexico join, is extremely rough, arid, and bare. The black, jagged uplands are much cut with almost impassable gulches, the entire region having characters which apparently in no part of this country attracted the house-builders.

I have not explored the northern and northeastern slopes of Carriso Mountain, from which several short canyons issue. From apparently trustworthy sources I have heard of numerous small ruins here.

My attention was called some time ago by Charles Lang, who shared in the early excavations of the remains of the so-called "basket makers" in the Cottonwood, Butler Wash, and Grand Gulch regions north of the San Juan, to the general similarity to these of the caves and burials along the lower Chin-lee and upon the western slopes of the Carriso and Luckachucki in which he has made some superficial excavations — a similarity which seemed to me also evident. It will be interesting to learn definitely, when systematic excavations under proper auspices shall have been undertaken here, whether in fact the "basket-maker" burials may not be found in the caves along the Chin-lee and possibly also in the Canyon de Chelly.

RUINS OF THE MARSH PASS AND NAVAHO MOUNTAIN REGION

The great barren and broken country which lies between the Chin-lee and the high mesas on the west, save for a few small springs and a scanty flow of alkaline seepage in the Gypsum Valley, is almost wholly waterless. Here are the great sandy stretches which mark the Chin-lee desert, and over which fierce wind-storms sweep, carrying the sand far away in vast clouds and for hours, sometimes for days, scour and scourge the country for many miles.

In the picturesque Monument Valley, where the dwindling remnants of great red buttes stand up in a fantastic array of pinnacles and towers, there is no water in summer save one small trickle from beneath a crag in the great fault which runs from the San Juan to Marsh Pass. I have found no ruins in all this country, nor have I been able to learn of any from reliable Indians long resident upon the borders of this district.

There are a few small cliff houses along a little water-course which issues from a canyon in the northern face of the Te-en-ta Mesa. The meager arable patches in this canyon bottom are now tilled by Navahos.

There are a few small valley sites, considerably washed, beside the arroyo of the small stream which descends for a short distance northeastward from Marsh Pass.

There are numerous small valley sites, several cliff houses, and a few pictographs in the canyon of the To-wan-ah-a-che, which enters Marsh Pass from the northwest. The upper end of this valley is well watered from a series of bubbling springs, and below these the underground flow of the valley rises to the surface in several places, so that there is considerable arable land now cultivated by Navahos in the wider alluvial bottom.

There are no ruins along the old trail which runs from the head of the south arm of this canyon across the high divide to the group of fairly well-watered Indian farms near the head of Paiute Canyon.

As one climbs out of the Paiute Canyon from the Paiute and Navaho Indian farms, going westward, he comes upon the great undulating and in places rugged mesa, which lies between Paiute and West canyons¹ and the eastern base of Navaho Mountain (plate xxxvi, 1).

An old trail crosses this mesa and leads by a sharp ascent to the sacred spring of the Navahos, which bubbles out far up the eastern slope of the great dome. Within a couple of miles, I should judge, from the western rim of Paiute Canyon, and a few hundred

¹The canyon through which the stream called on the Government maps "Navajo Creek" runs to enter the Colorado River, is now generally called West Canyon. It is a rugged and tortuous gorge in the upper portion, and as it does not belong in the San Juan watershed I have not explored it. But it contains, as I am informed by Richard Wetherill and Charles Mason, who have entered it, a considerable number of interesting ruins.

yards to the south of the trail, is a ruin of considerable size on the edge of a low bluff and extending down the slope at the foot. The burial mound is undisturbed.

This Navaho Mountain region has been rarely visited by white men. The renegade Paiutes and Navahos who occupy the few inhabitable places are not friendly, owing to their antipathy to mineral hunters, and while the larger surveying or prospecting parties have not been seriously molested, individual explorers have not usually come back. Thus the burial mounds in this vicinity have remained intact.

A few miles west of the Paiute Canyon and about half a mile to the north of the trail are two small fortified buttes (plate xxxvi, 2) with considerable fallen masonry about them, forming a mass about one hundred and thirty-five feet square: plan obscure, considerable pottery fragments. The burial mounds are not disturbed. Upon the same mesa, about a mile nearer the base of the mountain, is an isolated butte from twenty to thirty feet high and about ninety by sixty feet on the top, which is nearly covered with rooms. A series of rooms with circular *estufas* lie upon the eastern slope of the butte. The rooms on the top were apparently of one story and are arranged in a row along the more abrupt western edge of the rock. The stones are rough and carelessly laid. A considerable amount of broken pottery lies at the base of the eastern slope.

About one hundred yards southwest of this fortified rock, on a small knoll, is a closely clustered group of five ruins of the "unit type," the largest about one hundred feet long at the back. Each of the units of this group has its separate burial mound with much broken pottery, an unusual quantity of which is red. These ruins are considerably sand-covered.

Aside from the ruins just mentioned, I have found only one small house upon this mesa. This is about twenty-five feet square, and is near the trail several miles nearer the base of the mountain than the ruins last mentioned. Nor could I learn of any others from the Indians whose stock range this country. I could not discover evidences of habitation either near the spring or elsewhere on the eastern slope nor upon the summit of the mountain.¹ There

¹ The dome of Navaho Mountain is so low relatively to the size of its base that the view from the actual summit is limited to a few distant glimpses across the low timber

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1. NAVAHO MOUNTAIN, FROM THE PLATEAU WEST OF PAIUTE CANYON.

2. FORTIFIED ROCKS ON THE PLATEAU SOUTHEAST OF NAVAHO MOUNTAIN.

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is no permanent water on the mesa between the head of Paiute Canyon and the spring upon the eastern slope.

I have not explored Paiute Canyon nor the rough, broken country which lies north and east of the mountain toward the lower reaches of the San Juan. But from the Indians and from miners who have explored this region, I have heard of only a few small cliff houses in one of the gorges entering the San Juan east of Paiute Canyon.

ACCESS TO THE VARIOUS GROUPS OF RUINS IN THE SAN JUAN WATERSHED

I have indicated on the map the more important of the trails and wagon roads of this great district, especially those by which the groups of ruins may be most readily reached.

The part of the region embraced in the Navaho reservation and the adjacent country is traversed in all directions by innumerable Indian trails, some good, some very bad indeed. Some of these which I have traveled and thus have personal knowledge of, are located on the map in accordance with the old Government surveys. Many of the newer roads have been indicated from my own knowledge of them alone, as they have neither been surveyed nor before located upon a map. They may not therefore be quite accurately placed, but are sufficiently so to serve as guides for travel.

Well traveled roads traverse the lower Animas and La Plata valleys and pass close to most of the ruins along these bottoms. The Mesa Verde and the great region westward from this and north of the San Juan are most conveniently reached from Mancos, Colorado, which is on the southern narrow-gauge loop of the Denver and Rio Grande Railroad. A rough wagon track has been made down the Mancos Valley to the mouth of Cliff Canyon, out of which one may scramble on to the mesa near the so-called Cliff Palace and the Balcony House.¹ But for a thorough exploration of the Mesa Verde it is best to obtain pack-animals at Mancos, from which one may reach the nearest of the great cliff houses in a day.

Several days will be required to visit all the noteworthy ruins down the line of shallow gulches which furrow its sides. But from a series of rocky spurs which come out from all sides somewhat below the summit level one may gain wide views of the desolate and tenantless region which this mountain dominates.

¹ See Nordenskiöld, *Cliff Dwellers of the Mesa Verde*.

on the Mesa which are reached by obscure and tortuous trails. The numerous valley sites along the Mancos Canyon are accessible only on horseback.

A wagon road from Mancos or Cortez traverses McElmo Canyon, and from this the various side canyons and the tributaries of the Yellowjacket are accessible only by trails, except Ruin Canyon, up which a wagon road runs for a short distance.

The great groups of Montezuma Creek, Recapture, Cottonwood, Butler, Comb, and Grand Gulch may be reached from Bluff City as a base. It is necessary to have pack-animals for these trips. The trails are rough, and competent guides are necessary for one unfamiliar with the country. Bluff City may be reached by a wagon road over which there is at present considerable travel. This leaves the McElmo Canyon road at the Yellowjacket, bears over the high mesas, crossing Montezuma and Recapture creeks, and reaches the San Juan at Bluff. Bluff City may also be reached by a road from Monticello which follows down the high mesas east and south of the Abajo Mountain. This road I have not indicated on the map.

One should not suffer for water in this northern San Juan district even in summer, though it is often scanty and hard to find.

The San Juan Valley is traversed by a wagon road, in some places passable, in others not, from the mouth of Canyon Largo to the mouth of Comb Wash. But here also one is much more certain of progress when on horseback with a pack-train.

The great Chaco ruins are now most easily reached by a new wagon road made by the Hyde Exploring Expedition, which runs from Thoreau on the Santa Fé railroad, northward. This is about seventy miles. A wagon road from Albuquerque, by way of the Rio Puerco of the East and La Posta, enters the head of the Chaco Valley and follows down the wash past the Pintado ruin to the main group below. The ruins are however much farther from the railroad at Albuquerque than at Thoreau.

From Farmington and from Bloomfield on the San Juan wagon roads lead across the high mesas to the Chaco ruins. At present (1903) Richard Wetherill maintains an Indian trading-post near the great Pueblo Bonito, and in the little settlement which has formed

about this are a small hotel and accommodations for stock. A post office — Putnam — is now located here.

The mouth of Canyon de Chelly, where a trading post is maintained, may be reached from Gallup by way of Fort Defiance. From Fort Defiance also one may follow the high-line mountain road northward to the trading-post at Chee's, on Carriso Creek, from which as a base the Hospitito, Gothic Wash, and Carriso Creek groups may be explored.

The Marsh Pass and Navaho Mountain region may be reached from Chee's by Indian trails, but the route is very hot and dry in summer, as is nearly all of the Chin-lee Valley save near the bases of the mountains. Navaho Mountain may be reached from Bluff City in four or five days of hard and thirsty travel along the rough Indian trails crossing or skirting the picturesque Monument Park.

There is a wagon road over the Tunitcha-Luckachucki range at Cottonwood Pass, so that one can now drive across from the Chaco to the Chin-lee valleys.

I have not indicated the springs and water-holes upon the map, because many of these frequently fail in summer, and one who in this respect should rely upon map indications would be liable to come to grief. Nor do the lines of the water-courses, save in the high mountains, give any reliable indication of water available for the traveler.

It should be assumed that any one not familiar with desert travel and with the details of these particular desert regions will not venture unattended away from the few main routes. For limited regions which he knows, a reliable Navaho Indian (if he respects you, which is by no means to be taken for granted if you are a white man) may be an excellent guide, so far as water and trails are concerned. But it is wiser in the longer trips to secure the coöperation of a good frontiersman who can be trusted to manage stock wisely under the many vicissitudes of this rough and barren land, and to use the Indians only as local water and path finders and trailers of the animals which may wander off at night when water and forage are scanty.

It may be said in conclusion that, on the whole, one is much more independent and certain to accomplish his aims who travels on

horseback with a pack-train, while in a large part of the region this is quite indispensable.

The Indian trading-posts both on and off the Navaho reservation are of the greatest service to the wandering archeologist, since he is certain to find water there, usually feed for stock, and replenishment for his own larder. Those which are likely to be most important in this respect are maintained at present (1903) at the great Chaco ruins ; at Tiz-na-zin and Gray Hills in the Chaco watershed ; at the mouth of the Canyon de Chelly, and at Chee's in the Chinlee Valley. There are stores also at Thoreau, at Farmington, at Jewett, and at Bluff. There are other trading posts on and off the reservation, as indicated on the map ; but from their situation these are less likely to be useful to the ruin hunter than those above named.

VANDALISM

It will be seen from the notes on the various groups of ruins in the San Juan watershed that great injury has been wrought to the interests of archeology by the widespread, unlicensed, random digging among the ruins and burials. This is still going on in many places, and latterly, the Navaho Indians having overcome their superstitious dread of these old relics of mortality and stimulated by unscrupulous purveyors of bric-a-brac, are working havoc in many regions which have hitherto escaped.

In the early days, before the problems connected with these ruins had become clear and definite, the simple collection of pottery and other utensils was natural and not without justification. But it is now evident that to gather or exhume specimens — even though these be destined to grace a World's Fair or a noted museum — without at the same time carefully, systematically, and completely studying the ruins from which they are derived, with full records, measurements, and photographs, is to risk the permanent loss of much valuable data and to sacrifice science for the sake of plunder.

It is to be hoped that steps may soon be taken to protect these relics of a most instructive phase of primitive culture, and that authorized and intelligent research may be encouraged to enter a field still full of the promise of most interesting discovery.

THE CHAMORRO LANGUAGE OF GUAM

By WILLIAM EDWIN SAFFORD

INTRODUCTION

This account does not pretend to be a philosophical treatise, or a complete analysis of the structure and peculiarities of the Chamorro language, as the vernacular of the Marianne islands is called; but it is hoped that it may be of service to students of comparative philology, especially to those interested in the Malayan and Philippine groups of languages and the vernaculars of the islands of the Pacific.

Short vocabularies of the Chamorro were compiled by several men of science accompanying exploring expeditions, especially by Chamisso who visited Guam with Kotzebue in 1817, and in 1819 by Gaimard who accompanied Freycinet on the *Uranie*. In addition to these I have been able, through the kindness of the Reverend José Palomo of the city of Agaña, to copy a vocabulary compiled many years ago by a priest living on Luta, or Rota, the island next to Guam, in which the numerals of the vernacular, now obsolete, and a number of words not found in later vocabularies, occur. I have also derived much information from a small dictionary¹ prepared by Fray Aniceto Ibañez del Carmen, and from a little work by the same author in which the explanation of the Christian doctrine, the creed, and a number of prayers are given in parallel columns in Spanish and in the island vernacular.²

In the dictionary referred to there is no Chamorro-Spanish vocabulary nor any remarks whatever on the grammar of the Chamorro language. From the manual of devotions I was able to

¹ *Diccionario español-chamorro, que dedica á las escuelas de Marianas el P. Fr. Aniceto Ibañez del Carmen, Cura parroco de Agaña.* Manila: Imp. de Ramirez y Giraudier, 1865.

² *Devoción as San Francisco de Borja, Patron Luta: mapula y sacramentos sija ya jaf taimano ufanmaguef-recibe: devocion as San Dimas, y mauleg na ladron, Patron Maleso, yan Doctrina na mapula. Tinigue Pale Fr. Aniceto Ibañez del Carmen, Agustino Recoleta, jagas Cura yan Vicario guiya Marianas.* Manila: 1887.

get some insight into the structure of the language ; but the chief source of my information has been manuscript notes in possession of Father Palomo, and phrases and sentences kindly translated into the island vernacular for me by this reverend gentleman and by Don Juan de Torres. I was much interested to learn that both Father Palomo and Don Juan de Torres are descendants of Don Luis de Torres, an intelligent and well-educated native of the island, of whom Chamisso, Kotzebue, and Freycinet speak with great respect and affection, acknowledging him as the chief source of their information regarding the islands and their inhabitants. Indeed, in recognizing my indebtedness to Father Palomo I may repeat Chamisso's words concerning his ancestor, Don Luis de Torres: "I remember him with warm affection and sincere gratitude. . . . He opened to me the treasures of his knowledge and spoke to me of his people most lovingly." All of my leisure moments in Agaña were devoted to the instructive intercourse of this lovable gentleman, from whose mouth I wrote down the greater part of the following notes.

In the vocabularies referred to there are many discrepancies, owing to the different systems of orthography used. Thus the Chamorro word for fire, *guafi*, was written by M. Gaimard after the French manner '*goifi*'; *chalan* (road) he rendered '*shalan*,' and *achu* (stone) '*ashou*.' The latter two words were written by Chamisso '*tialan*' and '*atju*.' In the vocabularies compiled by the Spaniards the sound of the Chamorro aspirant, which is like the English and German *h*, was rendered by the guttural Spanish *j*, which is more nearly akin to the German *ch*. In comparing the early with the later Spanish vocabularies it is evident that many changes have taken place in the pronunciation of words in the island vernacular, owing to the aversion of the Spaniards for hard terminal consonants, and their tendency to change terminal *u* to *o*, which is more in keeping with the genius of their own language. The tendency to modify words in which there is an unpleasant succession of consonants has been acting for many years in Mexico, Central America, Peru, and other countries colonized by Spain, and words adopted from the vernaculars of aboriginal tribes have found their way into dictionaries in forms scarcely recognizable.

Most of the names on the published charts of Guam are improperly spelled and tend to confuse the student of etymology. Thus *Letegyan*, the name of the cape at the northern extremity of the island, is written 'Ritidian' or 'Ritillan'; *Hagatña*, or *Hagadña*, the name of the capital, has become 'Agaña'; *Humatag*, a village on the west coast, has been softened to 'Umata'; *Aniguag* to 'Anigua'; *Aplâ* to 'Apra'; *Malesô* to 'Merizo'; and *Inalahan* to 'Inarahan.'

The Marianne islands, also known as the Marianas or Ladrões, compose an archipelago of small volcanic islands in the form of a chain from north to south, about four hundred miles long, between latitude $13^{\circ} 14'$ and $20^{\circ} 30'$ north, and the meridians of $142^{\circ} 31'$ and $143^{\circ} 46'$ east longitude. They lie about four days' run by steamer eastward from the Philippines and have for their nearest neighbors the various groups of the Caroline islands to the southward. Guam, or Guáhan, the most important of the Mariannes, is the only island belonging to the United States, the rest of the group having been sold by Spain to Germany.

The group was discovered by Magellan, March 6, 1521. No settlement was made upon it by Europeans for nearly one hundred and fifty years, when, on June 16, 1668, a mission was established by Padre Diego Luis de Sanvitores, a Spanish Jesuit, in obedience to an order of Philip IV of Spain. The Spaniards continued in possession of the island until June 21, 1898, when it was seized by the United States.

The natives of the Marianne islands are called Chamorros. Their vernacular is called the Chamorro language. The word Chamorro is derived from Chamorri, or Chamoli, the ancient name for 'chief.'¹ They themselves, in speaking of their language, call it *Fino-haya*, or 'Idiom-of-the-south,' in contradistinction to the Spanish, which they call *Fino-lago*, or 'Idiom-of-the-north,' the Spaniards having first appeared to the natives coming from a northerly direction.

¹ It is interesting to note that in some of the Caroline islands the name for a high chief is *tamol*, while on the islands of Fate, Sasaki, and Api, of the New Hebrides group, *tamoli* is the word for 'man.'

The Marianne islands, together with the Carolines and the Marshall and Gilbert groups, have been included in a division called Micronesia, in distinction from the islands lying farther to the southward called Melanesia, and those farther eastward the inhabitants of which, together with the New Zealanders or Maoris, are called Polynesians or Sawaioris. Assertions are made that as a separate people the Chamorros no longer exist, having been nearly exterminated by the Spaniards in the seventeenth century;¹ and that the present inhabitants "are able to speak Spanish, which is gradually supplanting the native language, a Micronesian dialect nearly allied to that used by the Tagals of the Philippines."² In the classification of the Indo-Pacific races of man by S. J. Whitmee,³ the Marianne islands are not mentioned. The natives of the Caroline, Marshall, and Gilbert islands are grouped under the name of the Tarapon race, a division of the Brown people, to which the Sawaiori race of Polynesia, the Malagasy of Madagascar, the natives of Formosa, and the Malays of Sumatra, Java, and other islands of the Malay archipelago belong; while the natives of the Aru and Solomon islands, the New Hebrides and Fiji are classified as Papuan, a division of the dark-skinned people, or Melaneseans.

As a matter of fact the vernacular of the Mariannes is not a Micronesian dialect, but a distinct language having a vocabulary radically different from those of the Tarapon race mentioned above, with certain features, such as possessive enclitic suffixes added to the nouns as in the Malayan and Melanesian, or Papuan, dialects; and having, like the Tagalog, the Visayan, and other dialects of the Philippines, infixes as well as prefixes and suffixes, and reduplication of syllables in the formation of derivatives and in the conjugation of verbs.

Pure-blooded Chamorros are no longer to be found on the island, it is true; but in every native family on the island the Chamorro language is the medium of communication.⁴ The men were butchered by the wholesale, but many of the women became

¹ Coutt's Trotter in *Encyclopædia Britannica*, ninth ed., 1883, XVI, 256.

² *Encyclopædia Britannica*, 1882, XIV, 200.

³ *Ibid.*, 1885, XIX, 422-428.

⁴ See *American Anthropologist*, N. S., 1902, IV, 194.

wives of the Spanish, Mexican, and Philippine soldiers brought to the island to "reduce" the natives. Few foreign women have found their way thither, and it was from their Chamorro mothers that the children learned to talk.

The various races have amalgamated pretty thoroughly, and even the descendants of Englishmen and Scotchmen call themselves Chamorros. The language has naturally been modified by Spanish influence, just as the Hawaiian has been influenced by English; and into both languages words have been introduced by the colonizers. A very interesting feature of the modern Chamorro language, as will be shown farther on, is the way in which the natives make words of Spanish origin conform to the grammatical rules of the Chamorro, as in the formation of derivatives and of the plural, and in the conjugation of verbs.

I. ORTHOEPY

1. The pronunciation of the vowels of the Chamorro language may be described in general as resembling that of the Italian or German languages. It is, however, frequently difficult to decide whether a certain sound should be represented by *o* or *u*, or by *e* or *i*. The consonants, with the exception of *y* (pronounced like the English *j*) are pronounced as in English.

2. ALPHABET. — The Chamorro alphabet consists of the following letters: *a, ā, b, ch, d, e, f, g, h, i, k, l, m, n, ñ, ñg, o, p, r, s, t, u, y*.

In words derived from foreign languages soft *c* and *z* are replaced by *s*; hard *c* and *qu* by *k*; the Spanish *j* by *h*; Spanish *ll* by *y*; *v* by *b*; and *x* by *ks*. Originally there was no *r*, but in modern times, owing perhaps to Philippine influence, many words formerly pronounced with an *l* sound now have that letter replaced by *r*, as in *Rota*, the name of an island, formerly called '*Luta*.'

3. VOWEL SOUNDS. — When two or more vowels come together, each one is sounded. Thus *palaoan* (woman) is pronounced *palao-an*. A vowel is doubled only when there is a distinct repetition of a single sound; for example, *aabang* (the name of a tree) is pronounced *a-ábang*, and *oomag* (bathe) *o-ómag*.

The vowels of the Chamorro language are pronounced very nearly as follows :

a as in *far, father*; German *haben, Munn*; Spanish *ramo*.

ā as in *hat, man*; very much like the German Umlaut *ä*.

e as in *they*; German *leben, besser*; Spanish *qué, pensar*.

i as in *machine*, German *ihn, immer*; Spanish *hilo, inocente*.

o as in *note*; German *Ofen, oft*; Spanish, *nosotros, con*.

u as in *rule*; German *du, dumm*; Spanish *uno*; French *ou* in *douce*.

Vowels may be long, short, or guttural. Long vowels are either not marked at all or are indicated by a macron, as *lagô*, or *lāgô*, 'tear'; *seko*, 'beat with the fist'; *disô*, 'bruise or bump on the head'; *lolo*, 'lull'; *pugua*, 'betel-nut.'

Short vowels are indicated by a breve, as *lăgô*, 'weeper'; *sěso*, 'frequently'; *didîdê*, 'a little'; *lôkâ*, 'tall, high'; *gŭsê*, 'quick, soon.'

Guttural vowels are pronounced from the throat. They are indicated by a circumflex accent; as *lâlâ*, 'sprightly, lively'; *sêšê*, 'knife'; *đî*, 'behold'; *lôlô*, 'cough'; *lû*, 'however, notwithstanding.'

Confusion of Vowel Sounds. — As I have stated above, it is frequently difficult to determine whether a word should be written with an *e* or *i*, an *o* or *u*. Thus the word for 'male,' *lahe*, is sometimes written *lahi*; *chêlo*, 'brother,' is sometimes written *chêlu*; and *hanom*, 'water,' *hanum*. Whatever may have been the true sound of the vowels in the words above mentioned, we have *i* and *u* when enclitic possessive particles are added, as *lahimo*, 'thy son'; *lahiña*, 'his son'; *chêluho*, 'my brother'; *chelumo*, 'thy brother.' At the present time the natives are often undecided about the orthography of a word. In writing the name of a plant, for instance, some may use an *e* or *o* where others would use an *i* or *u*; thus, for *Urena sinuata* we may have *dadangsi* or *dadanse*; for *Clerodendron inermis*, *lodugao* or *lodogao*; and the Spanish *paloma*, 'dove,' becomes *paluma*.

Modification of Vowels. — After certain words and particles *a* becomes *ä*, *o* becomes *ɔ*, and *u* becomes *i*; somewhat after the manner of the change in German of *a*, *o*, and *u*, to *ä*, *ö*, and *ü*. Thus we have —

lahe, male;

hanom, water;

tomo, knee;

i lähe, the male;

guaha hānom? is-there water?

i temo, the knee;

<i>chotda</i> , banana-plant ;	<i>i chetda</i> , the banana-plant ;
<i>lokâ</i> , high, tall ;	<i>linekâ</i> , height ;
<i>guma</i> , house ;	<i>i gima</i> , the house ;
<i>tuba</i> , toddy ;	<i>taya tîba</i> , there-is-no toddy ;
<i>hutuñgo</i> , I-know ;	<i>intiñgo</i> , we-know.

It is by this peculiarity of the language that many of the discrepancies in the vocabularies compiled by early navigators have been caused. Some of them, for instance, give the word *guma* for 'house' and others *gima*, or, according to the French and Spanish orthography, *guima*. In the same way the word *kôlat*, 'fence,' or 'enclosure,' derived from the Spanish *corral*, is sometimes given *colat*, and at others *quelat*. From the confusion arising in this way it is evident that the letter *k* should be used in Chamorro to represent the sound of hard *c* and that *g* should always be hard ; so that we have *kôlat*, 'fence' ; *i kêlat*, 'the fence' ; *guma*, 'house' ; *i gima* 'the house' ; thus avoiding the substitution of *qu* and *gu* for hard *c* and *g* before *e* and *i*, which would be rendered necessary by the French and Spanish systems of orthography.

Diphthongs. — The diphthongs are as follows :

- ae*, is sounded very much like *ai* in *aisle* ; Spanish *maestro*.
- ai*, as in *aisle* ; like *i* in *pine* ; German *Hain*.
- ao*, very much like *ow* in *how* ; Spanish *carabao*.
- au*, like *ou* in *out* ; German *Haus* ; Spanish *causa*.
- ua*, like *wa* in *wasp* ; *ua* in *guano*.
- ue*, like *we* in *wear* ; Spanish *hueso*.
- ui*, like *we* in *weep*.

The Spanish *ei* is changed to *ai* ; as *raina*, 'queen,' from *reina*. Foreign words beginning with the sound of *w* take in the Chamorro an initial *g* ; thus, from the Spanish *huerta*, we have *guetta*, 'garden.' Watkins, the name of an Englishman who settled in Guam, has become *Guatkin*, and owing to the confusion of *t* and final *r* it is often written *Guarkin*, or, according to Spanish orthography, *Guarquin*. In the same way Oahu, the name of the island on which Honolulu is situated, is written *Guahû*, and the Spanish *abuelo* ('grandfather'), modified to *uelo*, has become *guelo*.

4. SOUNDS OF CONSONANTS. — The consonants are sounded as follows :

b as in *ball*; Spanish *bailar*; German *Buch*.

ch as in *church*; Spanish *mucho*; German *tsch*, *Kutscher*.

d as in *dog*; Spanish *dar*; German *Dach*.

f as in *fame*; Spanish *fumar*; German *fallen*.

g as in *get* (always hard); Spanish *gato*, *gu* in *guerra*.

h as in *hill*; German *Hand*; at the beginning of a syllable softer than the Spanish *j* and aspirated *g*.

k as in *kite*; German *kommen*; like hard *c* and *qu* in French and Spanish.

l as in *long*; German *liebe*; Spanish *lejos*.

m as in *moon*; German *Mann*; Spanish *malo*.

n as in *nut*; German *Nacht*; Spanish *no*.

ng as in *finger*; Spanish *lengua*.

ñg as in *song*; German *singen*.

ñ as in *cañon*, *ni* in *onion*; French *gn* in *campagnard*; Italian *Campagna*.

p as in *poor*; German *passen*; Spanish *palo*.

r as in *America*.

s as in *sit*; German *lassen*; French *sur*; Spanish *solo*.

t as in *table*; German *Tisch*; French *couteau*.

y like the English *j* in *June*; German *dj*; French *dj*.

Terminal *h* is pronounced almost like the German *ch*, as *ma-kah-na*, 'wizard.' In words derived from other languages terminal *l* and *r* become *t* (*kolonet* from the Spanish *coronel*; *Señot*, from *Señor*); the Tagalog *p* and *k* become *f* and *h* (*fanihi*, 'fruit-bat,' from *paniki*; *ifit*, a hard-wood tree, from *ipil*). For etymological reasons I retain *y* for the sound of the English *j*. In Guam the Spanish *y* is pronounced like the English *j*. The word *hayi* (pronounced *hadji* or *hadyi*) is sometimes written *hai* in old manuscripts, and it is possible that the original *y* of the Chamorros was pronounced like the English *y* in 'yes' and has been corrupted by Spanish influence to the modern *j* sound. The *ll* of words derived from the Spanish is replaced by *y* in Chamorro, as shown in *yabe*, 'key,' from the Spanish *llave*.

5. SYLLABLES. — Syllables may be open or closed, as *gu-ma* 'house'; *la-he*, 'male'; *ta-ta*, 'father'; *song-song*, 'village'; *dug-dug*, 'wild bread-fruit'; *chopag*, the name of a tree; *kah-na-ye*, 'to bewitch.' One of the most striking features to a student of east-

ern Pacific dialects is the presence of closed syllables. In a number of words of common origin with the Malayan and Sawaiori, final consonants are retained in the Chamorro which have been lost in the Sawaiori. Thus we have in the Samoan *manu*, 'bird,' and *niu*, 'coconut,' and in the Chamorro *manog*, *niyog*.

6. ACCENT.—In a word of two syllables the accent is usually on the first syllable, even though the word be adopted from the Tagalog or Spanish with the last syllable accented. Thus *kahí'*, 'orange,' and *bastón*, 'staff,' become *káhet* and *báston*.

In words of more than two syllables the position of the accent varies. If the emphasis does not fall on the penult it is customary, as in the Spanish, to indicate it by an acute accent over the vowel of the accented syllable. Thus in *agaga*, 'red,' no accent is indicated, as the emphasis falls on the next to the last syllable; while in *ápaka*, 'white,' an accent is placed over the first vowel to indicate that the stress falls on the first syllable. The accent of a root-word is often shifted by the addition of particles to the word either inserted or appended. Thus we have *táta*, 'father'; *tatáho*, 'my father'; *tatanmáme*, 'our father.'

There are certain particles, however, which always take the accent or stress when prefixed to a root-word. Usually if the accent follows the general rule, it is not indicated. When, however, the pronunciation of a word would be doubtful without it, it is expressed: as *maláet*, 'bitter,' pronounced *ma-lá-et*; *haiña*, 'his forehead,' pronounced *ha-i-ña*.

II. THE ARTICLE

1. NO INDEFINITE ARTICLE.—Originally there was no indefinite article in Chamorro. In the modern vernacular in places where it would be used in English the Spanish *un* takes its place. This word is invariable and is used with both masculine and feminine nouns:

<i>un lahe</i> , a man;	<i>un pulaoan</i> , a woman;
<i>un patgon</i> , a child;	<i>un raina</i> , a queen.

The use of this article cannot be regarded as in keeping with the genius of the language. In many cases where we would use the indefinite article, none is necessary in Chamorro; as *Guaha niyog?* 'Is there a coconut?'

2. THE DEFINITE ARTICLE *i*.—This article is used before common nouns and has the effect of changing the vowel of the tonic syllable of a noun or adjective immediately following it. It is invariable :

<i>hanom</i> , water ;	<i>i hānom</i> , the water.
<i>kahet</i> , orange ;	<i>i kāhet</i> , the orange.
<i>tomo</i> , knee ;	<i>i temo</i> , the knee.
<i>chotda</i> , banana-plant ;	<i>i chetda</i> , the banana-plant.
<i>pugua</i> , betel-nut ;	<i>i pigua</i> , the betel-nut.
<i>uchan</i> , rain ;	<i>i ichan</i> , the rain.
<i>tupo</i> , well ;	<i>i tipo</i> , the well.
<i>i palaoan</i> , the woman ;	<i>i famalaoan</i> , the woman.
<i>i lāhe</i> , the man ;	<i>i lālāhe</i> , the men.
<i>i mauleg</i> , the good one ;	<i>i manmaulig</i> , the good ones.
<i>guma</i> , house ;	<i>guma siha</i> , houses.
<i>i gima</i> , the house ;	<i>i gima siha</i> , the houses.

The definite article is usually placed before a noun modified by a possessive, as in the Italian *la madre mia*, 'my mother,' *i nānāho* ; *il tuo fratello*, 'thy brother,' *i chelu-mo* ; 'head,' *ulo* ; thy head, *i ilu-mo*.

If the noun does not immediately follow the article its tonic vowel is not affected ; for example, 'the high house' is either *i gima na lokā*, or *i lekā na guma*. In the latter case the adjective *lokā* is changed to *lekā* because it immediately follows the article.

The article *i* may be used as a personal pronoun followed by a relative :

<i>I maguflii</i> ,	he who is loved ; the loved (one).
<i>I man-maguflii</i> ,	they who are loved ; the loved (ones).
<i>Guaho i humáhanao</i> ,	(it is) I who am going ; I the going (one).
<i>I munhayan</i> ,	that which is finished ; the finished.
<i>I mapos</i> ,	he who departed ; the departed (one).

3. ARTICLES BEFORE PROPER NOUNS.—The Chamorro language resembles the Tagalog of the Philippines in the use of an article, *si*, before titles and the names of persons and animals. In this connection it may be regarded as the equivalent of the German definite article before proper nouns.

Si Huan,	German, der Johan ; John.
Si Nana,	German, die Mutter ; Mother.
Si Magalahe,	The Governor ; the high-chief.
Si Pale,	The priest (meaning the priest of the parish).
Si Pale Palomo,	Father Palomo.
Si Yuus,	God.
Si Rae,	The King (the reigning monarch).

As is an article used before the names of places, rivers, or natural objects, if these names be those of persons or of animals :

As Alonso,	the Alonzo (river) ;
As Kiroga,	the promontory named after Quiroga.
As Namu,	Mosquito (the name of a district).

As may also precede a proper noun used in apposition ; or when, as subject of a verb, it comes at the end of a sentence or subordinate clause :

<i>I temtom as Felipe,</i>	Philip the prudent. (The prudent one, Philip.)
<i>Ti hutungo haf hinasoso-ña enao as Pedro.</i>	I know not what Peter thinks of that (what his-thinking that, Peter.)
<i>I chelu-ho as Kiko.</i>	My brother Francisco.
<i>I saina-ta as Hesu Kristo.</i>	Our Lord Jesus Christ.

As is used also as a preposition before names of living persons, when it has the effect of the French *chez*, 'at the house of,' 'with.' *Gaige as Huan* (*Il est chez Jean*) ; He is **at the house of** John. *Umeyag as Don José* (*Il apprit chez Don Josef*) ; He learned **with** Don José.

The Article iya.— Places, districts, or natural objects named for saints or with names of no known signification are preceded by the article **iya**.

Iya Santa Rosa.	Santa Rosa (a mountain).
Loka iya Santa Rosa.	Santa Rosa is high.
Dangkulo iya Hagatña.	Agaña is big.
Dikiki na songsong iya Maleso.	A small town Merizo.
Hihot na ogso iya Makahna.	A near mountain Makahna.
Iya katan.	The eastward.

Iya is used also as a preposition, when it signifies 'at the house of':

Iya hita (<i>Chez nous</i>).	At (our) home. (Inclusive.)
Iya hame (<i>Chez nous</i>).	At (our) home. (Exclusive.)
Iya hamyo (<i>Chez vous</i>).	At (your) home.
Iya siha (<i>Chez eux, chez elles</i>).	At (their) home.

This preposition is usually preceded by *gi*, with which it unites, forming **giya**. Where is your father? — *Mano nai gaige i tata-mo?* He is at (our) home. — *Gaige giya hame*.

Giya may also signify 'with,' 'in the possession of' some one, or 'under the care of'; as —

<i>Gaige i magagu-mo</i> giya <i>guaho</i> .	Thy clothing is in my possession.
<i>Umeyag</i> giya <i>guaho</i> .	He studied under me.

Gi is suppressed before the article as:

<i>Fanmalag</i> as Felipe.	Go-to Philip's (<i>chez Philippe</i>).
<i>Gaige</i> as Pale.	He-is-at the Priest's (<i>chez le curé</i>).
<i>Hulie</i> as Huan <i>i payu-mo</i> .	I saw in-possession-of John your-umbrella.
<i>Umeyag yo</i> as Pale Palomo.	I studied under Father Palomo.

4. OMISSION OF THE ARTICLE. — If the name of a place is in the genitive or if it is preceded by *falag* ('go to') or *gine* ('from,' 'come from'), the noun does not take an article before it:

<i>Falag-España</i> ¹	Go-to-Spain.
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III. THE NOUN

I. GENDER. — Nouns may be of masculine, feminine, common, or neuter gender. Names of males belong to the masculine, names of females to the feminine, names of living things of which the sex is not indicated to the common, and names of inanimate objects to the neuter gender. Some plants are classified by the natives as male or female, and their names may be said to belong to the corresponding gender.

Gender may be indicated by distinct words or by the prefixes **lahe** ('male'), **palaoan** ('female'). The sex of mammals is some-

¹ In the last case the whole phrase is treated as a compound verb and is conjugated accordingly. In the tenses requiring reduplication of the accented syllable, the penult *pa* is that which is repeated, as though in English "I am go-to-Spain-ing."

times indicated by **toro** ('bull') and **baka** ('cow'), derived from the Spanish.

COMMON GENDER	MASCULINE	FEMININE
<i>taotao</i> , person ;	lahe , man ;	palaoan , woman.
<i>saina</i> , parent ;	tata , father ;	nana , mother.
<i>manog</i> , fowl ;	lahe na manog , cock ;	palaoan na manog , hen.
<i>patgon</i> , child ;	lahe na patgon , boy ;	palaoan na patgon , girl.
<i>chelo</i> , brother or sister ;	lahe na chelo , brother ;	palaoan na chelo , sister.
<i>ngāñga</i> , duck ;	lahe na ngāñga , drake ;	palaoan na ngāñga , duck.
<i>guaka</i> , cattle ;	toro , bull ;	baka , cow.
<i>chiba</i> , goat ;	toro na chiba , he-goat ;	baka na chiba , she-goat.
<i>asagua</i> , spouse ;	lahe na asagua , husband ;	palaoan na asagua , wife.

2. NUMBER.—Nouns may be of singular, dual, or plural number.

The *dual* number of nouns as used in Chamorro is indicated by a separate form when the relationship existing between the two individuals is *mutual* or *reciprocal*. It is formed by inserting the particle **um** before the first vowel of the primitive word :

<i>chelo</i> , brother or sister ;	chumelo , (two) brothers or sisters, or brother-and-sister.
<i>asagua</i> , spouse ;	umasagua , spouses, or husband and wife.
<i>atungo</i> , acquaintance ;	i umatungo , the (two) acquaintances ;
<i>gachong</i> , companion ;	i gumachong , the (two) companions ;
<i>aguflii</i> , friend ;	i umaguflii , the (two) friends ;
<i>parientes</i> , kinsman ;	i pumarientes , the (two) kinsmen.

The above forms are used only to express *mutual* relationship. In such expressions as 'John's two brothers' or 'John's brother and sister,' 'her two husbands,' 'my two companions,' the noun would not take the dual form. *I chumelo* might be rendered 'the two brothers' or 'two sisters of each other,' or 'the brother and sister of each other.'¹

Plural of Nouns.—With the majority of nouns the plural is indicated by the addition of the word **siha** to the singular. This is equivalent to the plural of the third personal pronoun. It usually

¹ It is interesting to note that words like *parientes*, derived from the Spanish, follow the laws of Chamorro grammar.

follows the noun, but it may precede it. If the idea of plurality is already expressed by a plural adjective it is unnecessary to add **siha** to the noun.

guma, house ; *guma siha, siha na guma* ; houses.
sêse, knife ; *sese siha, siha na sêse*, knives.
dangkulo na sêse, good knife ; *mandangkulo na sêse*, good knives.
chalan, road ; *chalan siha, siha na chalan* ; roads.
manog, fowl ; *manog siha, siha na manog*, fowls.
mauleg na manog, good fowl ; *manmauleg na manog*, good fowls.
tuhong, hat ; *tuhong siha, siha na tuhong*, hats.
babue, pig ; *babue siha, siha na babue*, swine.
i gima, the house ; *i gima siha*, the houses.

The Plural Prefix man. — Certain nouns, and adjectives in general, form their plural by taking the prefix **man**. This prefix is used also to denote the plural in certain tenses of intransitive verbs. Nouns forming their plural in this way are usually the names of persons and of occupations in which persons are engaged. The latter are usually derivatives from verbs :

<i>chelo</i> , brother or sister ;	mañelo , brothers, sisters, or brothers and sisters. ¹
<i>saina</i> , parent ;	mañaina , parents.
<i>gachong</i> , companion ;	managachong , companions.
<i>aguflii</i> , friend ;	managuflii , friends.
<i>kikoko</i> , harvester ;	mañgikoko , harvesters.
<i>pápake</i> , gunner ;	mamápake , gunners.
<i>sake</i> , thief ;	mañake , thieves.
<i>tituge</i> , writer ;	manituge , writers.
<i>fáfahan</i> , purchaser ;	mamáfahan , purchasers.
<i>fífilak</i> , braider ;	mamífilak , braiders.
<i>i mauleg</i> the good (man) ;	<i>i manmauleg</i> , the good (men).
<i>i tailaye</i> , the bad (man) ;	<i>i manailaye</i> , the bad (men).
<i>tunas</i> , just (man) ;	manunas , just (men).
<i>yomog</i> , fat (man) ;	manyomog , fat (men).

It will be observed in the above examples that the prefix *man* has the effect in some cases of changing the initial letter of the primitive word. Thus—

¹ Like the German *Geschwister*.

ch is changed to **ñ** (*chelo*, *mañelo*);
f is changed to **m** (*fiñlak*, *mamiñlak*);
k is changed to **ñg** (*kikako*, *mañgikoko*);
p is changed to **m** (*pápake* *mamápake*);
s is changed to **ñ** (*sake*, *mañake*);
t is changed to **n** (*tituge*, *manituge*).

When a change takes place in the initial letter the final letter of the prefix *man* is dropped. This does not apply to certain words of Spanish origin, as *manparientes*, the plural of *parientes*; *mankasao*, the plural of *kasao*, 'married person.' On the other hand we have *mañantos* as the plural of *santos*, 'saint'; *mamôbble*, the plural of *pobble*, 'poor'; *mamale*, the plural of *pale* ('padre'), 'priest.'

When a noun is preceded by an adjective in which plurality is expressed, it is not necessary that the noun should assume the plural form :

Manog, fowl; *Apaka i mānog*, the fowl (is) white.

Manog siha, fowls; *Manápaka i manog*, the fowls (are) white.

Nouns denoting relationship usually have a possessive particle united to them enclitically. The word *lahe* without the enclitic particle signifies 'male'; with the particle it signifies 'son.' Thus we have —

<i>lahi ho</i> , my-son ;	<i>hagaho</i> , my-daughter ;
<i>lahimo</i> , thy-son ;	<i>hagamo</i> , thy-daughter ;
<i>lahiña</i> , his- or her-son ;	<i>hagaña</i> , his- or her-daughter ;
<i>lahita</i> , our-son ; ¹	<i>hagata</i> , our-daughter ; ¹
<i>lahinmame</i> , our-son ; ²	<i>haganmame</i> , our-daughter ; ²
<i>lahinmiyo</i> , your-son ;	<i>haganmiyo</i> , your daughter ;
<i>lahinñiha</i> , their-son.	<i>haganñiha</i> , their daughter.

Many words in modern Chamorro are derived from the Spanish, just as in the modern Hawaiian there are many derived from the English :

¹ The possessive particle *ta*, 'our,' is used when the person spoken to is included ; thus *lahita* and *hagata* would be used by husband and wife in speaking to each other of their son and daughter.

² The particle *mame*, 'our,' is used when the person spoken to is excluded ; thus *lahinmame* or *haganmame* would be used by a father or a mother in speaking to any one else of their son or daughter.

	<i>pariente</i> , kinsman ;
<i>tio</i> , uncle ;	<i>tia</i> , aunt ;
<i>primo</i> , cousin ;	<i>prima</i> , female cousin ;
<i>guelo</i> , grandfather ; ¹	<i>guela</i> , grandmother.

Irregular Plurals. — A few words form their plural irregularly, some by reduplicating the first syllable :

<i>lahe</i> , man ;	<i>lalahe</i> , men ;
<i>lahiho</i> , my son ;	<i>lalahiho</i> , my sons ;
<i>hagaho</i> , my daughter ;	<i>hahagaho</i> , my daughters ;
<i>patgon</i> , child ;	<i>famaguon</i> , children ;
<i>palaoan</i> , woman ;	<i>famalaoan</i> , women.

A kind of plural is expressed by prefixing to proper nouns or titles the particle *ha* :

<i>si haPedro</i> ,	Peter and friends, Peter and companions.
<i>si harae</i> ,	the king and court, the king and suite.
<i>si hamagalahe</i> ,	the governor and staff.

3. CASE. — Strictly speaking, the form of a noun does not vary to indicate case. To indicate the genitive or possessive, however, the name of the object possessed, if it ends in a pure vowel (not guttural), takes an additional *n* when it is followed by a possessive noun or a possessive pronoun not enclitic :

<i>pulo</i> , hair ;	<i>i pilun babale</i> , hair-of the eyelid (eyelashes).
<i>tata</i> , father ;	<i>i tatān tātamo</i> , the father-of thy-father.
<i>tomo</i> , knee ;	<i>temon kanae</i> , knee-of the arm (elbow).
<i>chelo</i> , brother ;	<i>i chelon nānaho</i> , my mother's brother.
<i>lāhen magalahe i pātgon</i> ,	the child (is) the son-of the governor.
<i>hāgan palaoan i pātgon</i> ,	the child (is) the daughter-of the woman.

4. DERIVATIVES. — As in the Malayan, Melanesian, and Polynesian dialects and in many other languages a word may be used as several parts of speech ; but in the Chamorro language the primitive word is usually combined with certain particles which become amalgamated with it. In the new word, or derivative, the root is not always recognizable at first glance, but by eliminating

¹ *Guelo* and *guela* are derived from the Spanish *abuelo* and *abuela*.

the particles it becomes evident. These particles may be enclitically prefixed, affixed, or incorporated into the body of the word. The changes which a noun may undergo may be illustrated by the English word *shoe*, from which we have the verbs *to shoe*, *to unshoe*, *to reshoe*, which are conjugated like any other verb; the passive form *to be shod*; the nouns *shoer*, *reshoeing*, *unshoeing*; the adjectives *shod*, *unshod*, *rough-shod*, and *shoeless*. From the preposition *in* we have the adverbs *in*, *inward*, *inside*; the adjective *inner*, *inmost*, *innermost*, *inside*; the noun *inside*.

In the Chamorro there are words corresponding to these, formed by the addition of particles, and even of additional words, as *to cause-to-shoe*, *to cause-to-be-shod*; the interjection *in* (German *here-in*!); *his-inward*, *his-eastward* (i. e., east of him), and many others.

Derived Nouns.—We have already noticed the formation of the reciprocal dual by placing the particle *um* before the first vowel of a word and the formation of the plural of adjectives and of certain nouns by prefixing the particle *man*.

The Particle in.—This particle when inserted before the first vowel of an adjective, verb, or adverb forms an abstract noun. Like the definite article *i* it has the effect of modifying the simple vowels *a*, *o*, and *u*, following it to *ā*, *e*, and *i*:

lokā, high; *līnekā*, height.

fedā, broad; *finēda*, breadth.

anácō, long; *inanácō*, length.

halom, within; *hlnālom*, inside, heart.

fahan, buy; *fināhan*, a purchase.

haso, think; *hināso*, thought.

fatinas, do; *finatinas*, an act.

taetae, pray; *tinaetae*, prayer.

mauleg, good; *minauleg*, goodness.

ti mauleg, unkind; *ti minauleg*, unkindness.

hupon, pale; *hinipon*, pallor.

ápaka, white; *ināpaka*, whiteness.

homhom, dark; *hinemhom*, darkness.

metgot, strong; *minetgot*, strength.

gagō, idle; *gināgō*, idleness.

paupau, fragrant; *pinaupau*, fragrance.

sotsot, contrite; *sinetsot*, contrition.

sangan, say; *sinangan*, discourse.

Reduplication of First Syllable.—Verbal nouns designating the performer of an act or an habitual occupation are formed by the reduplication of the first syllable of the verb or by prefixing it to a similar syllable. The vowel of this prefix must be long, whether

that of the prefix to which it is prefixed be long or short. It is never guttural, and it causes the vowels following to be long, although in the primitive word they be short; it is open although the vowel in the primitive word be closed, and it makes open vowels of those which follow. If the first vowel of the primitive word be other than *a* it is changed to *i* in the prefix.

<i>kānō</i> , eat ;	<i>kākānō</i> , eater ;	<i>uga</i> , caress ;	<i>i-uga</i> , one who caresses ;
<i>sañgan</i> , talk ;	<i>sasañgan</i> , slanderer ;		
<i>kolat</i> , fence ;	<i>kkolat</i> , fence-maker ;	<i>atituyi</i> , pry, lurk ;	<i>a-atituyi</i> , eaves-dropper, a lurker ;
<i>tesgue</i> , cheat ;	<i>ttesgue</i> , cheater ;		
<i>asgue</i> , fumigate ;	<i>āasuge</i> , fumigator ;	<i>fai-ni-nug</i> , spy ;	<i>fafai-ni-nug</i> , a spy ;
<i>tugē</i> , write ;	<i>ttugē</i> , writer ;		
<i>kōkō</i> , harvest ;	<i>kkōkō</i> , harvester ;	<i>chat-pachod</i> , evil-mouth ;	<i>cha-</i>
<i>goha</i> , fan ;	<i>gigoha</i> , fanner ;	<i>chatpachod</i> , blasphemer ;	
<i>tugtug</i> , inflame ;	<i>ttugtug</i> , one who inflames ;	<i>goñggoñg</i> , grunt ;	<i>gigoñggoñg</i> , grunter.

The above form is used only to denote an occupation or the performer of an habitual act. It is incorrect to say *i nanalibreta*, 'our savior,' from *na-libre*, 'to make-free' (a word derived from the Spanish). In this case a derivative with *in* is formed from the verb : *i minalibre-hit as Hesukristo*, 'our savior Jesus Christ'; that is, 'he who saved-us Jesus Christ.'

The Prefix gâ. — The particle *gâ* when prefixed to a noun or a verb in the infinitive signifies a fondness, taste, or propensity for a particular thing or act :

ROOT	INFINITIVE	DERIVED NOUN
<i>tangis</i> , weep ;	<i>tumangis</i> , to weep ;	<i>gâtumangis</i> , one prone to weep.
<i>layao</i> , ramble ;	<i>lumayao</i> , to ramble ;	<i>gâlumayao</i> , a gad-about.
<i>mames</i> , sweet ;		<i>gânmames</i> , a lover of sweets.
<i>salape</i> , money ;		<i>gâsalape</i> , an avaricious man.
<i>machoch</i> , labor ;		<i>gâmachoch</i> , an industrious man.
<i>tuba</i> , toddy ;		<i>gâtiba</i> , one addicted to toddy.
<i>palaoan</i> , woman ;		<i>gâpalaoan</i> , a runner after women.
<i>kaliso</i> , reed ;		<i>gâkaliso</i> , the reed-warbler.

The Prefix gi. — This particle prefixed to a geographical name signifies an inhabitant, native, or citizen of a place.¹

¹ Instead of this prefix the word *taotao* ('person') may be used, as *taotao Luta*, a man of Rota ; *taotao Hagat*, a citizen of Agat. Spanish names of countries are now also used.

Luta, the island of Rota ; *gilita*, an inhabitant or native of Rota.
Hagat, the village of Agat ; *gihāgat*, an inhabitant of Agat.
Lago, north ; *gillāgo*, a northman, a Spaniard.
Haya, south ; *gihāya*, a southerner, a Chamorro.

The Particles fan . . . yan.—A word preceded by the particle *fan* and followed by *yan* or *an* signifies a place devoted to some particular thing or in a certain state or condition :

sune, taro (*Colocasia antiquorum*) ; *fansuniyan*, a taro-patch.
tupo, sugar-cane ; *fantupuyan*, a cane-field.
fache, mud ; *fanfachian*, a muddy place.
maeis, maize ; *fanmaeisan*, a corn-field.
fāai, growing rice ; *famadayan*, a rice-field.
benado, deer (from the Spanish) ; *fanbenaduyan*, a place abounding in deer.

The Suffix ha.—The particle *ha* appended to a noun or a pronoun signifies 'alone,' 'real,' or 'pure' (without admixture), 'no one else,' 'nothing else' :

Yuus, God ; *Yuushá*, God only, God himself, God and no one else ;
Haga, blood ; *Hagahá*, blood only, real blood, blood itself ;
Hanom, water ; *Hanomhá*, water alone ; pure water ;
Guaho, I ; *Guahohá*, I myself, even I, I alone, I by myself ;
Hago, thou ; *Hagohá*, thou thyself, even thou, thou alone ;
Guiya, he or she ; *Guiyahá*, he himself, even he, she alone.
Ufañule hanomhá ni i gini i He-will-take pure-water which is in
tipo, sádog, tasi, pat gini i the well, river, sea, or in the rain ;
ichan ; sa ti vale i hanom ni for not avails the water which is
*i gini niyog pat tinegcha.*¹ in a coconut or fruit.

IV. THE PRONOUN

I. ETYMOLOGY. — The pronouns of the Chamorro language are of the same origin as those of the Malayan, Philippine, Melanesian, and Polynesian languages :

¹ Directions for baptism, from Fray Aniceto Iboñez' *Explanation of the Holy Sacraments*, pp. 16-17. In the expression *ti vale*, *ti* is the negative particle and *vale* is taken from the Spanish.

ENGLISH	CHAMORRO	TAGÁLOG	MALAYAN	FATE ¹	SAMOAN
I ;	<i>guaho, yô;</i>	<i>akô ;</i>	<i>aku, saya ;</i>	<i>kinu, au ;</i>	<i>'o a'u, 'ou ;</i>
thou ;	<i>hago, hao ;</i>	<i>ikáo, ka ;</i>	<i>angkau ;</i>	<i>nango, ngo ;</i>	<i>'o 'oe ;</i>
he, she, it ;	<i>guiya, gui ;</i>	<i>siyá ;</i>	<i>ia, dia ;</i>	<i>nai, a ;</i>	<i>'oia ;</i>
we (incl.) ;	<i>hita, hit ;</i>	<i>táyo ;</i>	<i>kita ;</i>	<i>ngita ;</i>	<i>tātou ;</i>
we (excl.) ;	<i>hame, ham ;</i>	<i>kamí ;</i>	<i>kami ;</i>	<i>ngami ;</i>	<i>mātou ;</i>
you ;	<i>hamyo ;</i>	<i>kayó ;</i>	<i>kamu ;</i>	<i>kumu, mu ;</i>	<i>'outou ;</i>
they ;	<i>siha ;</i>	<i>silá ;</i>	<i>dia-orang ;</i>	<i>nara, ra ;</i>	<i>lātou.</i>

2. NO DUAL FORM. — Unlike the Tagálog and the Polynesian languages there is no distinct form for the dual of pronouns. With verbs the dual is expressed, in certain conjugations, by the singular form of the verb accompanied by the plural form of the pronoun ; for example, *basnak yô*, 'I fell' ; *basnak hit*, 'we two fell' ; *man-basnak hit*, 'we fell.'

3. TWO FORMS OF THE FIRST PERSON PLURAL. — Like the other languages of the preceding table and their allies the Chamorro has two forms for the plural of the first person. The first includes the person addressed and the second excludes him. Thus *hita* ('we,' inclusive) signifies 'you and I' or 'thou and I' ; *hame* ('we,' exclusive) signifies 'he [or she] and I' or 'they and I.' In the Polynesian form above given the essential parts of the pronouns are the first syllables, *ta* and *ma*, the second syllable, *tu*, being derived from *tolu*, the numeral 'three.' Just as in the Samoan the plural *ta* is used sometimes for the singular, so in Chamorro *hita* may be used as a sort of "editorial *we*."

4. MODIFICATION OF PERSONAL PRONOUNS. — When the pronoun is used alone or follows a preposition, or when for emphasis it precedes the predicate, the first form given in the preceding table is used. When the predicate or object is the principal idea to be expressed, the pronoun follows the predicate and the second form in the table is used. This form may be considered an abbreviation of the first. For the second and third persons plural there is but one form, whether the pronoun precedes or follows the verb.

A. PRONOUNS USED EMPHATICALLY AND AFTER PREPOSITIONS

Who is coming ?

Hayi mamamaila ?

I am coming.

Guaho mamamaila.

¹ Melanesian ; belonging to the new Hebrides group.

Who drank the toddy?	<i>Hayi gumimen i tiba?</i>
Thou drankest the toddy.	Hago gumimen i tiba.
He drank the toddy.	Gulya gumimen i tiba.
We (you and I).	Hita .
Who is that?	<i>Hayi enao?</i>
We (they and I).	Hame .
At our house (<i>chez nous</i>).	<i>Giya hame</i> .
At your house (<i>chez vous</i>).	<i>Giya hamyo</i> .
At their house (<i>chez eux</i>).	<i>Giya siha</i> .

B. PRONOUNS FOLLOWING THE PREDICATE

Do you sleep at home?	<i>Mamaigo hao giya hamyo?</i>
No, I sleep at the palace.	<i>Ahe, mamaigo yô gi palasio.</i>
He wishes to go.	<i>Malago gui humanao.</i>
Give me (some) water.	<i>Nae yô hanom.</i>
Bring us (a) green coconut.	<i>Chulie ham manha.</i>
I-give you (an) orange.	<i>Hunae hao kahel.</i>
We have (some) fowls [you and I].	<i>Mangâe manog hit.</i>
Who (art) thou ?	<i>Hayi hao?</i>
I (am a) man.	<i>Lahe yô.</i>
Thou (art a) woman.	<i>Palaoan hao.</i>
He (is a) child.	<i>Patgon gui.</i>
We (are) brethren (you and I).	<i>Mañelo hit.</i>
We (are) tall (they and I).	<i>Manloka ham.</i>
You (are) bad.	<i>Manailaye hamyo.</i>
They (are) very good.	<i>Mangîfmauleg siha.</i>

From the above examples it will be seen that the second form of the pronoun as given in the table is used if, whether as subject or object, it follows the predicate.

Pronominal Prefixes to Verbs. — Where the subject is not emphatic, and a transitive verb or a verb with a definite object is the principal idea to be expressed, certain particles are prefixed to verbs to express person. These cannot be regarded as independent pronouns, but in a manner as corresponding with the endings of a verb in Spanish or Latin.

Did you see the owl? **Unlii i memo?**

I-saw the owl, Hulii i memo;	We-saw the reed-warbler, Talii
We-saw the fan-tail, Enlii i	<i>i gâkaliso;</i>
<i>chichirika;</i>	You-saw the kingfisher, Inlii i
Thou-sawest the crow, Unlii i	<i>sihig.</i>
<i>âga;</i>	They-saw the fruit-bat, Halii i
He-saw the rail, Halii i kôkô;	<i>fanihi.</i>

6. DEMONSTRATIVE PRONOUNS. — As in other languages the demonstrative pronouns differ from corresponding adjectives only in being used independently of a noun:

<i>Kalang modoŋg yuhe i aânok.</i>	Like (a) ship (is) that-yonder which is-approaching.
<i>Hayi enao? Hayi yena?</i>	Who is that?
<i>Daŋkulo ini, dikikê enao.</i>	Big (is) this, little that.

7. INDEFINITE AND INTERROGATIVE PRONOUNS. — In the same way the indefinite and interrogative pronouns correspond to indefinite and interrogative adjectives:

Guaha mato,	Somebody has-arrived.
Konê hayihâ i unsodâ,	Catch whomsoever you find.
<i>Hutungo hayi si Kiroga,</i>	I know who Quiroga was.
Hayi naanmo?	Who (is) thy-name?
Dididê siŋa hukanô,	Little can I eat.
Hayi si Matapang?	Who was Matapang?
Haf enao? Hafa yena?	What is that?
Haf ini? Hafa yini?	What is this?

8. RELATIVE PRONOUNS. — The relative as used in the Chamorro language may be regarded as a distinct part of speech differing from the pronoun. Those used are **i**, **ni i**, and **na**.

A. The relative **i** may be called a definite relative. It is used if the antecedent is a demonstrative pronoun or is limited by a demonstrative adjective without the article **i**:

Si Kiroga yuhe i mangana giya Luta. Quiroga was that one **who** conquered on the island of Rota.
Si Huan yuhe i pumuno i gaho babue. John is that one **who** killed my pig.

B. The relative **ni i** is used when the antecedent is limited by the definite article **i**:

<i>Mafanaan José Palomo i pale</i>	Is-named José Palomo the priest
<i>ni i fumânâgue yô.</i>	who taught me.
<i>Gâho yuhe i nobiyo ni i kumâkate.</i>	Mine (is) yonder the ox which is-
	bellowing.
<i>Nâe nu ini i chelumo ni i bachet.¹</i>	Give this to your-brother who is-
	blind.

c. The relative **na** is used with descriptive subordinate clauses and may be called indefinite. It is used with an antecedent which is not modified by a demonstrative adjective nor by the definite article.

<i>Ayegue lahe gi gima na mañgón-</i>	There is a man in the house who
<i>gone magi manog siha.</i>	has brought hither fowls.
<i>Huliê taotao na purôhâ lumâyao.</i>	I saw a person who did-nothing-but
	boast.

d. Sometimes, as in English, the relative is omitted. An involved sentence having a principal and a subordinate clause is better rendered in Chamorro by a compound sentence with coördinate clauses connected by the conjunction *ya* ('and').

<i>Hihina i hakonê nigab na guihan</i>	The fish Manuel caught yesterday
<i>si Manuel.</i>	was poisonous.

¹ In the above cases **i** might possibly be regarded as an article and the relative clause a noun, as 'your brother the blind one.'

(To be continued.)

NOTES ON SOME CHEYENNE SONGS

By GEORGE BIRD GRINNELL

All Indians are musicians to a greater or less extent. They possess a few noisy musical instruments, such as drums, rattles, whistles, bullroarers, and the like, and often at night from the hill-sides comes the plaintive music of the flute, where the Indian lover is playing for the pleasure of his sweetheart, or in the hope that he may call her out from the lodge. But, after all, most of their music is vocal. Most of the instrumental music of the Cheyennes is in some degree ceremonial, or is expressed under the influence of strong emotions. The warrior, going into battle, whistles shrilly on an instrument made from the wing-bone of the war eagle. The doctor, working over a dying patient, rattles ardently, in the hope that he may drive away the evil spirits. The musicians, at the dance, pound with fervor on their drums; but while all of these sounds preserve time, they are not harmonious.

The flute players no doubt performed chiefly for their own satisfaction—for the enjoyment which they had in making music. They never played in the day time. Some men wandered about playing all night long. Early in the evening they were heard playing out on the hills, at a distance from the camp, the music moving along from height to height until it had encircled the camp. Later in the night music was heard closer, often immediately outside the circle, and moving around it. Toward morning it might sound within the circle and in the middle of the camp, and at daylight it ceased.

Some young men used flutes or large whistles made for them by men who were supposed to possess peculiar powers, and such flutes had the property of charming the girl the man loved, and made her love him.

The Cheyennes have a vast number of songs. Many of these are, in fact, prayers, but prayers set to music, like the white man's hymns. Often these religious songs are airs merely, without words,

but many of them have words. Some may consist of an air, hummed or sung, in the midst of which may be inserted one or two words, apparently without significance. There are mourning songs, sung for the dead in praise of him who has gone, and telling of the sorrow of the survivors, and of the suffering which his loss entails. There are also children's songs, sung by men or women for the amusement of children, or as lullabies. Dance songs are usually without words, but serve as music to accompany the drum which beats time for the dancers. Morning songs are sung by individuals, usually early in the morning, just after they have awakened and before they arise.

Besides these, there are songs of love, of war, and of adventure. Wolf songs, so called—said to have been learned from the wolves and perhaps remotely in imitation of the howling of these animals—are songs of travel, of roaming about, and were commonly sung by scouts or young men who were out looking for enemies, since a scout was called a "wolf." Then, too, there are doctoring songs, sung by healers while working over their patients. They are religious songs.

The number of religious songs is very great, for all Indians have an elaborate and complicated ritual connected with their religious ceremonies. At the present day only the older men, and indeed but few of them, are acquainted with these songs, since, as the old ceremonies are no longer practised, the young men learn neither the ceremony nor the songs which go with it.

The wolf songs were sung by scouts, or by young men alone on the prairie, whether traveling or looking for enemies, or often, I am told, by men when they felt depressed, downhearted, lonely, or discouraged. It is perhaps for this reason that these songs contain frequent references to the singer's sweetheart. On the other hand, the words of many of them seem to be addressed by a leader to his followers, in order to encourage them. Some of these songs are supposed to be sung by a girl, and addressed to her lover. Of these, one of the most pleasing, as well for its air as for its words, is the one beginning "*Tá mts st vá in,*" a translation of which is, "Put your arms around me, I am not looking," and the meaning is, that if the girl saw that her lover was about to embrace her, she

would feel obliged to repulse him, but she wished him to put his arms around her, and now that she was not looking, he might do so without fear of rebuke. Another wolf war-song, supposed to be sung by a man traveling about, says, "My love, it is I who am singing. Do you hear me?" Another one, by a leader addressing his followers, says, "Take courage; do not be frightened; follow where you see me riding my white horse." In another song by a leader to his followers, he says, "Friends, take courage, I see my sweetheart." The view is, that the mention of the sweetheart's name may bring him luck.

A man traveling alone, sang, "I do not see my love," and then changing his address, went on, "Come out of your lodge, so that I may see you"; and again changing it, said, as he discovered her, "Aha, I do see you." Still another runs, "My love, come out of the lodge, I am searching for you"; another, "My love, come out into the prairie, so that I may come near you and meet you"; and another, "My love, do not scold me, I love only you." While these songs were commonly sung during a war journey, or even by people who are alone, away from the camp, they were sung also by young men who are sitting on the hills close to the village, and for no other purpose than their own amusement.

Often, young men about to start on a war journey went about the camp singing songs which were recognized as those sung by people about to go to war. They might march about the circle of the lodges, and stopping before certain of them, sing these songs. From the lodge which was being serenaded, contributions to their equipment were handed out, such as two or three pairs of moccasins, a few arrows, half a dozen balls, or a little packet of powder. Such a song is the following: "Call them together before we go away, and we will dance till morning." This might be sung over and over many times as they marched through the camp. A party just leaving the village to go to war, might sing, "I am going to search for a man; if I find him, there will be fighting; perhaps he will kill me." This was sung again and again as they rode over the hills from the camp.

A successful war party, returning to the village, sang, just as they descended the hills close to the camp, and until their people

came out to meet them, a song of joy and triumph, "I have returned home ; again I shall see my love." Or perhaps this, "All have returned alive ; you all shall see your sweethearts"; and later, after they had come into the village, and perhaps were marching about it, such a song as this, "In the mountains I met with a man ; I charged upon him and fought him and killed him, and took his scalp."

A warrior whose fortune while on the warpath had been bad, and who was therefore angry and discouraged, might sing, "My heart is angry, my love is lost." A dance song sung by the Fox Soldiers society had words which are in praise of youth, and to encourage valor, by pointing out the miseries of old age. They run as follows: "When a man gets old, his teeth are gone. I am afraid" (of that time), "I wish to die" (before it comes).

The doctoring songs are usually short and simple. The words are repeated over and over again, as in this one: "I know myself ; I possess spiritual power." Another song, by a woman, says, "I know about things above ; I possess spiritual power."

Beside all this, there are various animal songs, some of them religious, others merely invoking good fortune. A certain song, known as the horse song, may be sung over a horse, in order to make him strong, sound, and swift, for a particular occasion.

The examples given below are, I believe, fair specimens of Cheyenne songs. They were collected several years ago from the Northern Cheyennes. The translations to which I have been helped by my friends William Rowland and his son James Rowland, are offered for what they are worth, since I can lay claim to but little knowledge of the Cheyenne language.

I add brief grammatical notes to some of the songs, which were furnished me by a missionary, who requests that his name be not mentioned. His knowledge of the Cheyenne language is equaled by that of only one or two white men.

WAR SONG. (BY RIDGEWALKING AND OTHERS. GIRL SPEAKING.)

<i>Ksō wāh' ēwō,</i>	<i>is tsī im'</i>	<i>nā ēh' hyä ;</i>	<i>nā i' shī mā hāāt.</i>
Young man,	wife	she is afraid of me ;	I am getting old.

Ksu wāh' iss, 'little young man,' 'youth' (Latin, *juvenis*), perhaps 16 or 17 years of age. *Hts tsī im's*, 'his wife.' *Na ei' hya*, 'she is afraid of me.'

TRANSLATION: Young man, his wife is afraid of me. I am growing old.

WOLF SONG. (BY THE SAME SINGERS.)

Ksō wāh' nā tūn' [father [daughter *ksō wāh' his tōh' nā tōh'.*
Young man daughter speaks] speaks] young man just like a man.

Hōwā tūm' [Father speaks].
Just the same.

Ksu wāh', 'young man' (Latin, *adolescens*), from 17 to 25 years of age.

WOLF SONG. (BY THE SAME SINGERS.)

Tā mis' si vā in, nis' sā wō māt.
Of your own accord me catch hold of, I am not looking at you.

Tā is the sign of the imperative. *Na wōm'*, 'I see him or her.' *Nas sa womo*, 'I do not see him or her.' *Nis' sa wo' māt si*, 'I do not see thee.'

TRANSLATION: Put your arms around me. I am not looking.

WOLF SONG

Niss in i' o, his tăn, iv' a vōst, hō hūm ō ān'; iħk i yōits.
My close friend, seized, it annoys her, you are doing wrong; it worries (me).

Nis sin i', from *wis si*, 'with,' and *na nī i'*, 'I stand.' *I his' tăn o*, 'he takes him or her.' *Iw' a wōst*, or *iv' a vōst*, very likely = *iv a vo' ish*, the feeling caused by being obliged to refuse a favor.

Nissin i' ō, 'close friend,' 'chum'; and refers to the peculiar and very strong attachments formed between young men. Damon and Pythias or David and Jonathan give the idea.

TRANSLATION: My close friend, your taking that girl in your arms annoys her. You are doing wrong and it troubles me.

WOLF WAR SONGS. (BY TALL BULL. SUNG BY A MAN TRAVELING ABOUT.)

Nāh mēh' ōn, nā; nī nīs' ?
My love, it is I (who am singing); do you hear me?

Nāh mēh' ōn, from *na me hot'to*, 'I love him or her.' *Nī nīs't*, 'Do you hear me?' (Latin, *audire*). *Nī nīs't o mon i*, 'Do you hear (understand) me?' (Latin, *intelligere*.)

WOLF SONG. (A LEADER IS ADDRESSING HIS FOLLOWERS.)

Shi vi tăn d' uts, *tši vi hēh' pō yūts,* *nān ē' hyō vē* *itsi*
 Keep trying, (do) not be frightened, I it is who
 wōhkpē *tā* *hō'ists.*
 white horse rides.

Shi vi tăn ots', imperative plural—'Exert yourself,' 'Courage';
Stsi vi hēh' po yots,—future imperative—'do not be frightened';
 the present is, *nī vi hēh' po yots*. *Na neh' ov*, 'it is I.'

TRANSLATION: Take courage; do not be frightened. Follow me where you see me riding my white horse.

WOLF SONG. (LEADER ADDRESSES HIS FOLLOWERS. THE MENTION OF HIS SWEETHEART MAY BRING HIM GOOD FORTUNE.)

Hō'wā, *shī vi tăn d' uts,* *nā mēh* *nā wōm'.*
 Friend, keep trying, my love I see(her).

Na mēh' = na mēh' ōn. (See above.)

TRANSLATION: Friend, take courage. I see my sweetheart.

WOLF SONG

Na mēh' o *na sāi wōs' tā;* *hyō' in* *nā tā wōm'.*
 My love I do not see her; come out I see her.

Hō' in, 'Come out!' (imperative); *Na nihk o i*, 'I come out';
Nanihk o i, 'I come'; *Na ho i*, 'I arrive'; *Nani hets hiam i*, 'I come slowly';
Na am' i, 'I walk'; *Na ho ēs' to i*, 'I come out (of bushes)';
Na ēs' tsi, 'I enter'; *Na ēssi wōn i*, 'I crawl (go) under';
Na āmi wōn i', 'I creep'; *Na a i'*, 'I go upstairs'; *Na anho i'*, 'I go downstairs';
Na hōōm i', 'I go behind'; *Na ta' o i*, 'I go out.'
Nā tā wōm', 'I see her.' The *ta* is emphatic; hence, 'I do see her.'

TRANSLATION: I do not see my love. (To her:) Come out of your lodge. I do see her.

WOLF SONG

Another wolf song has the same words as the last with the addition of—

Ni tō sī wōm'.
 I want to see you.

Ni to st vom' signifies 'I am about to see you'; or, perhaps, 'I need to see you'; 'I wish to see you.' *Tō' si* gives all those shades; it is invariable.

TRANSLATION : I wish to see you.

WOLF SONG

Tā is tăn' i wō sī' mā.
Seize and kiss her.

Tā is tăn' = ta hts' tane, imperative of *na his' tan*, 'I take him or her.' *Tā* may also be rendered by 'go' or 'do,' as in *na ta wom*, above.

TRANSLATION : Put your arms around her and kiss her.

MEDICINE LODGE SONG. (SUNG IN THE MEDICINE LODGE.)

Ītsi vī i ūhk' ūt, i'ā mā i yū.
Nothing bad say, it is sacred.

Ītsi vī i ūhk' ut is perhaps *sti vī ūhk'*, 'Do not talk.' *Ī'ā māi yū'* is for *ī'ā mā hi yūn'i*, 'it is medicine'; 'it is sacred.'

TRANSLATION : Do not say anything bad. This place is sacred.

MEDICINE LODGE SONG

Māi yūn' āsts nī vō' ish; shī vā' tūm; nī vīs' tūm.
Spiritual powers be propitious to me; take pity; help (me).

Mā i yūn' āsts, direct address. *Nī vō' ish*, probably for *nīh vō' vīshs*, 'be propitious to me'; from *na vo vei ho*, 'I am propitious.' *Shi va' tūm*, probably *nshi va' tam*, 'have pity on me'; singular imperative, from *na nshi vī tām'*, 'I have pity on him.' *Nī vīs' tūm = nīh vīs' tām*, 'help me,' from *na vīs' tām*.

TRANSLATION : Spiritual powers, be propitious to me. Take pity on me. Help me.

ANGRY WARRIOR'S SONG

Nā hāh' ist ā ūts na mēh' o iv ōn' i yūts.
Angry heart my love is lost.

Na hāh' ist a' ots, probably *nā hā' bštī' sta a' ots*, 'I am angry in my heart'; from *na*, 'I'; *hā bštī' a*, 'bad'; *nah ststs'*, 'my heart'; *ōts*, suffix meaning 'growing,' 'becoming.'

TRANSLATION : My heart is angry. My love is lost.

WOLF SONG

Na mēh' ōn hōw' ūhk, nīn nīts' i vōm.
My love come out, I am searching for you.

How' uhk is perhaps for *ho ihn'sts*, or *ho' ahksts*, 'come out quickly or hurriedly,' from *na ho ahk*. *Ni nt's i vom*, probably *nī nōh tsi' wōm*, 'I look for you,' from *na nōh'tsi wōm*, 'I look for him.'

TRANSLATION: My love, come out of the lodge; I am searching (only) for you.

SONG OF SUCCESSFUL RETURNING PARTY, BY TALL BULL, ISSUES, WOLF, LITTLE WHITE MAN. (SUNG BY THE PARTY JUST AS THEY DESCEND THE HILLS CLOSE TO CAMP, AND UNTIL THEIR PEOPLE COME OUT TO MEET THEM.)

Nā i' shō yūts, *nāts hō' sī vōm* *na mēh' ōn.*
I have arrived, again I shall see my love.

Nā' ishō yūts, is *nā ish ho eyohts*: *na*, 'I'; *ish*, 'already'; *hō ēy ohts*, 'come back'; with the distinct meaning of coming up on the other side of a hill or mountain. *Nāts hō' sī vōm* should be *na tos hōssi wōm*: *na*, 'I'; *tos* (ellipsis for *tō'si*), 'about'; *hō'si*, 'again'; *wōm*, 'see him or her.'

TRANSLATION: I have returned home. Again I shall see my love.

WOLF SONG

Hō'wē, *na mēh' ōn* *na wī'sī wō.*
Friend, my love I with her.

Ho we is singular and seems to be used only as a vocative. *Na wīssi wō*, 'I with her.'

TRANSLATION: Friend, my love is with me.

SONG OF RETURNING WAR PARTY

Nist hkwīst *nī vō' ish* *i'v hōw yūts,* *nīts' hō sī vōm* *na mēh' ōn.*
All of us living have returned, you will see again your love.

Nist o hkwīts, 'all we,' or 'all of us.' *Nīts hōsi vom* should be *nī tos hōssi wōm'ov*, 'you are again about to see her.'

TRANSLATION: All have returned alive. You all shall again see your sweethearts.

SONG OF RETURNING WAR PARTY

Wō' is tān i *nā hō i hyō'tō* *hō hō nāh' iv,* *Nāh' ā i yūts,* *na mī' ūt.*
A man follow in the mountains, I rush on him, I fight.

Wō' is tăn i nă năh', hī mīk' ō na is' ān.
 A man I kill, his head (*i. e.*, scalp) I take.

Wo is tan i, 'a man.' *Na hoi hyot'* = *is na hoi hōts'*, 'I follow him.' *Hō hō năh' w*, 'on the stone'; from *hō hō na'*, 'stone,' and *iva*, 'on' or 'in': 'on the stone'; that is, 'on the stony mountain,' the Big Horn mountain, to which generally they add the word *mōhk' ta*, 'black'; *i. e.*, the black stone, meaning Big Horn mountains. *Na mi' ut* is for *na mi yōt*, 'I fight him.' *Hi mīk'*, 'head' or 'hair'; hence, 'scalp'; the tense is present, and there is question of one person only.

TRANSLATION: I follow a man in the mountains. I charge upon him. I fight him. I kill him, and take his scalp.

SONG BY SOLDIER WOLF

Na mēh' o, tūhk' tō ā' nū yūts nī tehō' i hyō' tō.
 My love, (on) open walk out me toward come
 ground (each other) together.

Tūhk' to is probably for *tōhk te*, 'anywhere,' 'in the open ground' (Latin, *ruri*).

TRANSLATION: My love, come out into the prairie, so that I can come near you and meet you.

FOX SOLDIER DANCE SONG, BY WILD HOG. (SUNG BY A YOUNG MAN.)

Mā ā kis' hī vē' ist i wān' i na ē' hō hō wān' i.
 Old man teeth gone I am afraid he is not.

Mā ā kis' is for *ma ha' kiss*, 'old man.' *Na vē' is*, 'my tooth'; *hī vē' is*, 'his tooth'; *hī vē' ists*, 'his teeth.' *Ho wān' i* = *ho wān ē' i*, 'he is not.'

TRANSLATION: When a man gets old his teeth are gone. I am afraid (of that time). I want to die (before it comes).

WOLF SONGS, BY TALL BULL

Tā ō nōm' na mēh' ō. Tās iv' hō nā mēh' ō?
 Call my love. Where is my love?
nā sāt' its ish i wōm'.
 I not have (yet) seen (her).

Hō = hyō.

TRANSLATION: Where is my love? I have not seen her.

Na mēh' o nā wī ē tō tūhk' im; na mih hyūť.
My love me do not scold; I you love.

TRANSLATION: Do not find fault with me, my love. I love you alone.

Hō'wā, Ōh nī' hā Nūt' kēhē nā tō' sī wīs tōm'.
Friend, Omaha Soldier woman I shall marry.

(Repeat three times.)

TRANSLATION: Friend, I am going to marry the Omaha Soldier woman (*i. e.*, a woman who takes a certain part in the Omaha Soldier Society dance).

SONGS OF FAREWELL, BY A LARGE WAR PARTY. (SUNG AFTER THEY HAVE MOUNTED AND ARE RIDING OUT AND AWAY FROM THE VILLAGE.)

Wō' is tām ī nā tōs' ī nūt' sī vōm nā māh vōm'. Tā mēh' ūhk
A man I shall search for I if see (him). There will be
ī vā in, nāhts ī nūhk ī nāh'.
fighting, perhaps killed (me).

TRANSLATION: I am going to look for a man. If I find him there will be fighting. Perhaps I shall be killed. (Repeat over and over again till they get away from the camp.)

(SUNG BY THE PARTY WHILE WALKING ABOUT THE CAMP THE NIGHT BEFORE THEY SET OUT ON THEIR JOURNEY.)

Tā ō nō' mī, its is sār' āssī yūts, tā vōn hō sō' its.
Call him (together), he not being gone, till morning a dance is.

(Repeat indefinitely.)

TRANSLATION: Call them together, before we go away, and we will dance till morning.

DOCTORING SONG, BY BRAVE WOLF

Nī' to na hīn' in, na mā ī yūn'.
My body I know, I am spiritual.
(myself)

TRANSLATION: I know myself. I possess spiritual power.

DOCTORING SONG, BY BRAVE WOLF'S WIFE.

Hē am' na hīn' ī, nā mā ī yūn' ī.
Above I know, I am spiritual.

Hē am a, 'above.'

TRANSLATION : I know about the things above. I possess spiritual power.

WOLF SONG

Na tōs' hōt si yōh', nīt ōs' wis tōm', tō' si mī hyū'ts.
I will work, you I will marry, will love you.

Nitō' si, Nitō' si.

TRANSLATION : I will work ; I will marry you ; I will love you.

WOLF SONG

A mīn ūhk'ī, nī mī hyū't ; hīn ō wāh tchis āb sī' vās tō' ūt ?
A mīn ūh'kī, I love you ; why is bad heart ?

TRANSLATION : Amīnūh'kī, I love you. Why are you angry ?

THE LANSING SKELETON

By ALEŠ HRDLIČKA

The skeleton of the so-called "Lansing man," the history of which has become well known through the writings of Williston,¹ Upham,² Winchell,³ Chamberlin,⁴ and Holmes,⁵ was examined by me (the skull in the care of Mr M. C. Long at Kansas City, Missouri, the other skeletal parts in the care of Prof. E. Haworth at Lawrence, Kansas) on the fourth and fifth of October, 1902.

Through the courtesy of Mr Long I was enabled to visit and examine at pleasure the site of the discovery of the skeleton, and on digging a little in the tunnel at the end of which the skeleton was discovered, I myself found, not far from this end, a piece of probably human bone *in situ*. However, both my visit and this find are of secondary importance.

The results of my examination of the skeleton were read before the International Congress of Americanists at its New York meeting in October last by Dr George A. Dorsey, who also had examined the skull and who agreed with my conclusions. The publication of this paper, however, was retarded by my last expedition to Mexico.

The Lansing skull is now deposited in the National Museum, and I have reexamined it as well as compared it with numerous unquestionably modern Indian crania. The present communication, therefore, should be freed from all suspicion of hastily drawn conclusions.

THE SOMATOLOGICAL CHARACTERS OF THE SKELETON

The skeleton is fairly complete, but many of the constituent parts are damaged and many fragments are wanting.

¹ *Science*, August 1, 1902.

² *Ibid.*, August 29, 1902; *American Geologist*, September, 1902; *American Anthropologist*, 1902, vol. 4, No. 3, p. 566.

³ *American Geologist*, September, 1902.

⁴ *Journal of Geology*, Oct.-Nov., 1902; also notes by Calvin and Salisbury in *ibid.*

⁵ *American Anthropologist*, 1902, vol. 4, No. 4, pp. 743-752.

All the parts of the skeleton show a nearly uniform yellowish-white color and all are of similar consistency. Portions of the bones show adhering soil, which now, in its dry state, is uniformly gray. In addition there are spots at which is a closely adhering, hard, brittle, grayish, apparently calcareous concretion.¹

The bones are quite hard and not very brittle; they are not sufficiently chalky to mark a blackboard. They fully preserve their structure and exhibit no visible traces of fossilization.

The skeletal parts are all entirely normal, that is, free from anomalies or disease, with one exception: a few of the articular surfaces are surrounded by moderate marginal exostoses, such as occur frequently in older individuals, or certain forms of arthritis.

The skeleton is distinctively that of a male of about fifty-five years of age. The man was of medium stature (about 1.65 m.) and of ordinary strength. The bones of the lower extremities indicate better development than those of the upper, showing greater relative use of the former.

Considered anthropologically, all the parts of the skeleton, and the skull in particular, approach closely, in every character of importance, the average skeleton of the present-day Indian of the Central states. Zoologically, as well as in growth, the Lansing skeleton and the skeleton of the typical present-day Indian of the upper Mississippi region are of the same degree and quality.

There is no resemblance whatever between the Lansing skull and the skulls found in Riverview Cemetery, at Trenton, and in Burlington county, New Jersey.²

THE SKULL

The cranial vault is fairly well preserved, but the facial parts and the base are to a large extent destroyed. When recovered by Mr Long the skull was in pieces, but it has been well repaired and is suitable for measurement. The skull shows good development and is in no way artificially deformed. It exhibits slight asymmetry, the

¹ Some of this concretion covers the edges of breaks, as in the humerus and femur, showing these breaks to be ancient; and more adheres to the occipital and parietals within the cranium.

² Hrdlička, "The Crania of Trenton," etc., *Bull. Am. Mus. Nat. Hist.*, N. Y., 1902, vol. XVI, art. III.

left part of the frontal bone protruding somewhat more than the right; such asymmetry is quite common and is not due to any detectable abnormal condition. Viewed from side, top, or base, the skull is ovoid in shape, the smaller end forward; from front and back, particularly the latter, it appears pentagonal, with the summit of the figure upward.

The forehead is somewhat low and sloping when compared with that of a well-developed skull of a white man, but it appears ordinary in comparison with the forehead of undeformed skulls of Indians. It is very much superior to that of the Neanderthal cranium.

The temporo-parietal region shows but moderate convexity; the parietal bosses, however, are well defined, though they are not unduly prominent.

The sagittal region is somewhat elevated, forming a moderate sagittal ridge, which extends from about the obelion to bregma; a slight ridge is also seen along the metopic line over the middle third of the frontal bone. These ridges, which, separated or more often joined, are common in Indian skulls, give the cranium, when viewed from before or from the back, the pentagonal appearance.¹ About midway between the bregma and lambda the ridge, which from this point backward rapidly diminishes, forms a quite marked but in no way abnormal summit.

The occiput is quite bulging, as is common in dolichocephaly.

The base is much damaged, but so far as can be determined, it agrees in its general features with that of an average skull of the modern Indian. The lower jaw is also somewhat damaged; it agrees in sexual character with the rest of the skeleton, and may be described as about medium in all its characters and in no way peculiar. The chin shows fair prominence. There are nine teeth remaining in the jaw, all of about average male size and all considerably worn down, which is the rule with older individuals among the Indians.

The thickness of the cranial vault and the weight of the skull are in no way extraordinary. (The thickness of left parietal below temporal ridge is 4 to 5 mm.)

The supra-orbital ridges are quite pronounced, but not abnormal for a male; they are restricted, as is the case in many Indian crania,

¹ See the photographic illustrations of the skull in Professor Holmes' paper, *op. cit.*

to the median half of the supra-orbital distance. The glabella is not very prominent.

The temporal ridges are moderate; nearest approach to the sagittal suture, 4.5 cm. Occipital ridges, except that at the level of the inion, quite indistinct.

The zygomæ and mastoids are broken; the remnants show nothing unusual.

The nasion depression is good, inter-orbital distance moderate (at level of nasion, 2.6 cm.). Nasal bones show fair breadth (8 mm. beneath nasion; right 7 mm., left 5 mm. broad). The walls of the orbits are rounded, not unduly heavy; orbital depth ordinary.

Parietal foramina absent, mastoidal moderate. The situation and inclination of foramen magnum (so far as it is possible to judge) and the depth of glenoid fossa are as in an ordinary Indian skull.

The sutures show medium complexity and are considerably involved by synostosis (senile). This is most marked in the coronal and the anterior part of the sagittal suture, but extends in lesser degree through the rest of the sagittal and the whole lambdoid. All the sutures about the temporal bone, and the fronto-sphenoidal, fronto-malar, fronto-nasal, and internasal sutures are still free.

Ventrally the skull shows but few brain impressions, except on the temporals, as among modern Indians. The metopic crest is low. The capacity must have exceeded 1500 c.c.

Racially the skull is dolicocephalic (cephalic index, 73.75) and quite high (basion-bregma very near 14.0 cm.). The nasal index cannot be determined; the orbits are probably mesoseme.

Detail Measurements

Diameter antero-posterior (glabella-occipital).....	18.9
“ antero-posterior from ophryon.....	18.8
“ lateral maximum	13.9
“ bregma-basion. near	14.0
“ bregma-opisthion.	15.6
“ bregma-biauricular line.....	12.6
“ frontal minimum	9.4
“ frontal maximum (along coronal suture).....	11.3
Nasion-bregma arc.....	12.8
Bregma-lambda arc.....	12.1
Lambda-opisthion arc.....	12.9
Circumference maximum (above supra-orbital ridges).....	52.0

Thickness of left parietal, below temporal ridge.....	4-5 mm.
Thickness of left parietal, above temporal ridge.....	6-8 mm.
Estimated capacity.....	1525 to 1550 c.c.

OTHER PARTS OF THE SKELETON

Femora: Maximum length of right, 44.0 cm. ; left, broken.

Torsion and inclination of neck moderate. *Linea aspera* quite pronounced, but not abnormal. The bones are quite strong. The shaft presents a well-marked upper subtrochanteric flattening, as is common in the femora of Indians. There is on each side a rough, long, but low elevation in the location where the so-called third trochanter is sometimes found ; this low ridge represents a muscular insertion (*gluteus max.*) and is a sign of muscular activity.

Tibia: Maximum length of left tibia, minus spine, about 35.7 cm. Right tibia, broken. The bones are of medium masculine strength, and neither in form nor in the inclination of the head show anything abnormal.

Fibulae in fragments, nothing unusual.

Humeri: Length (maximum) of right, near 32.0 cm. ; left, defective (part lost). No unusual torsion. There was apparently a bilateral moderate perforation of the fossa.

Radii: Length (maximum) of left, 25.4 cm. ; right, broken. The relative length of the radius with the humerus is somewhat greater than in whites, but is not rare in Indians.

Ulna in fragments, nothing special.

All the bones of the upper extremity are somewhat slender.

Pelvis much damaged, but enough remains to indicate that it was rather small and masculine. The superior semicircular lines are represented by a marked elevation.

Small bones and fragments of the skeleton show nothing remarkable.

Measurements

	R.	L.
<i>Femora</i> : diam. antero-posterior maximum at middle.....	2.75	2.8
“ lateral maximum at middle.....	2.75	2.6
“ antero-posterior at upper flattening.....	2.45	2.3
“ lateral maximum at upper flattening.....	3.25	3.35
Shape of shaft, right, approaching.....	1 ¹	

¹ See Hrdlička, "Typical Forms of Shaft of Long Bones," *Proc. Assoc. Amer. Anatomists*, Fourteenth Annual Session, 1900, p. 55.

<i>Femora</i> : Shape of shaft, left.....	4	
<i>Tibia</i> : left, diameter antero-posterior at middle.....	3.1	
diameter lateral at middle.....	2.0	
Index.....	64.5	
Shape of shaft, both, 3 and somewhat 4.		
<i>Humeri</i> : right, diameter antero-posterior at middle.....	1.55	1.5
diameter lateral maximum at middle.....	2.2	1.85

As these measurements show, the shaft is somewhat flattened.

The height of the individual, judging from the long-bones by Manouvrier's tables,¹ was about 1.65 m.

CONCLUSION

The inevitable conclusion from the above examination, which was conducted absolutely without prejudice or preformed opinion (unless it was with the hope that the specimen might prove beyond

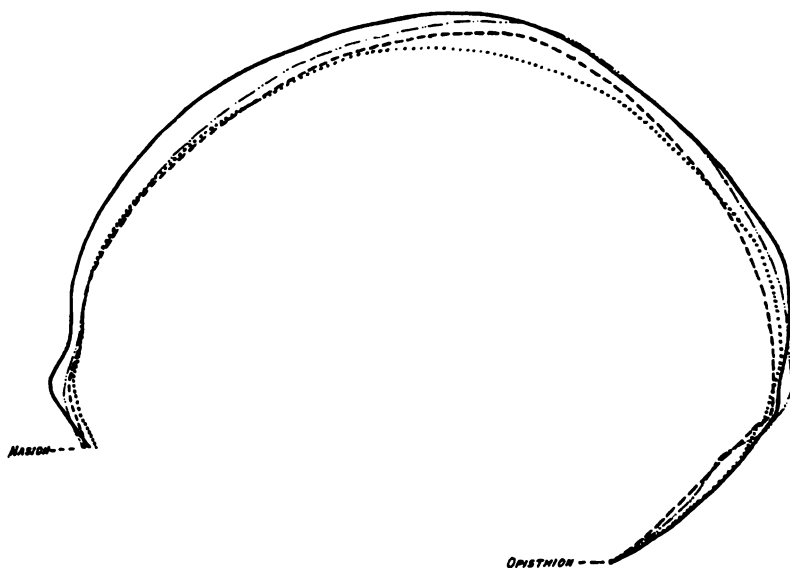


FIG. 8. ——— Lansing skull; - - - - Kaw skull (152, N. M.); Pawnee skull (550 N. M.); - · - · - Ponca skull (796 N. M.).

doubt an ancient one, since such a discovery would be of the greatest importance to American and even to general anthropology), is, as expressed before, that the Lansing skeleton is practically

¹ *Mém. de la Soc. d'Anthropologie de Paris*, 11 sér., IV, 1892. See also *Revue Mens. de l'Ecole d'Anthropologie de Paris*, 11, p. 227.

identical with the typical male skeleton of a large majority of the present Indians of the Middle and Eastern states. Any assumption that it is thousands of years old would carry with it not only the comparatively easily acceptable assumption of so early an existence of man on this continent, but also the very far-reaching and far more difficult conclusion that this man was physically identical with the Indian of the present time, and that his physical characteristics during all the thousands of years assumed to have passed have undergone absolutely no important modification.

Comparative Measurements of the Lansing Skull and the Skulls of Other Plains Indians

	Lansing Skull.	Ponka Skull. 796 N. M.	Kaw Skull. 152 N. M.	Pawnee Skull. 550 N. M.	Pawnee Skull. 531 N. M.
Diameter antero-posterior maximum (glabella-occipital).	18.9	18.85	18.4	18.9	18.7
Diameter lateral maximum.	13.9	14.2	13.6	14.05	13.9
	near				
Basion-bregma height.	14.0	14.0	13.75	13.4	13.7
Cephalic index.	73.5	75.3	73.9	74.3	74.3
Diameter frontal minimum.	9.4	9.0	9.2	9.0	8.9
Diameter frontal maximum (along coronal suture).	11.3	11.5	11.6	11.7	11.1
Nasion-opisthion arc.	37.8	37.7	36.6	38.1	35.2
Circumference maximum (above the ridges).	52.0	52.0	51.2	52.3	51.8
Thickness of left parietal below temporal ridge.	0.4-0.5	0.4-0.6	0.4-0.5	0.4-0.45	0.35-0.45
	between				
Cranial capacity.	1525 and 1550 c.c. calculated.	1530 c.c.	1445 c.c.	1530 c.c.	1480 c.c.

In order to present further evidence in support of these conclusions, I have taken from the collection in the National Museum several modern male adult crania of individuals belonging to tribes that occupy or occupied sections not far distant from that in which the Lansing skeleton was found. I append the measurements of these skulls contrasted with those of the Lansing cranium and accompany them with an illustration (figure 8). The similarities are all very apparent. If the Lansing skull differs in any way from the others, it is in its somewhat better development, particularly over the frontal region. But the type of the skulls is the same. It

would have been well to include some Potawatomi and Kickapoo crania, but these tribes are poorly represented in our cranial collections.

Near the Lansing skeleton was found a portion of the upper jaw of a child six or seven years of age. The bone shows nothing extraordinary. Three of the teeth (first dentition premolars and a permanent first molar) are still preserved; their size is ordinary; the enamel is white and without any cracks. The first permanent molar shows three roots and four cusps.

THE HAIDA CALENDAR ¹

By JOHN R. SWANTON

The Haida Indians of the Queen Charlotte islands have a simple but interesting system of counting the months. An entire year is called a "cold," or, as we should say, a "winter," and originally this was divided into two periods of six months each with a thirteenth month intercalated between them. In enumerating these to me they began with the summer series, recommencing their count with the winter series. The first is said to correspond nearly to our month of April. The following list was given me at Masset by an old man of the Rear-town people named 'Walter':

SUMMER SERIES (MASSET)

1. *A'nska-i la'qoñas* ("Month when the berries are forming"), also called *Q'a'gan gias*, which, on the strength of the Skidegate list, may be interpreted "Halibut month," although I could not ascertain the meaning of the words at Masset. In this month, too, laughing geese (*A. albifrons*) begin to fly north and toward the end of it the salmon-berry bird begins to sing.

2. *Wa'ajgwalga-i*.—This word means that the weather is still somewhat cold.

3. *Qoñqō'ns* ("Great month").—This month was so named because the weather is then quite warm. Fish also become more plentiful, and the sap-layer of bark, being thicker than at other times, is eaten.

4. *S^san gias* ("Killer whale month").—So named because cedar-bark is then stripped from the trees and the noise made in doing it is likened to that of blowing killer whales. During this month, also, spring and white salmon begin to run.

5. *K'i's'als*.—This month is said to have received its name from

¹ From notes taken during the winter of 1900-01 spent on the Queen Charlotte islands in the interest of the Jesup North-Pacific Expedition. The phonetics employed are the same as those used in the publications of the Expedition.

the fact that all animals then begin to grow fat and their bellies large, but a decidedly different interpretation was given to the words by my informants at Skidegate.

6. *Qa'lga qoña's* ("Ice month").—So called because ice then first makes its appearance on the rain-water in the canoes. The other salmon begin to run during this month.

Q!e'daq!edas ("Between month").—This was so named because it is the intercalary month between the summer and winter series.

WINTER SERIES AND BEGINNING OF THE SECOND COUNT

1. *Dja qoña's* ("Digging month").—Bears dig roots, etc., during this month before hibernating.

2. *Qo'ao giā'ñas* ("Standing to defecate").—So called because snow was then deep on the ground.

3. *ḡgitu'n qoña's* ("Goose month").—Canada geese then come down from the swamps to the coast and are consequently plentiful.

4. *Tan qoña's* ("Black-bear month").—Black bears now begin to come out after their winter sleep.

5. *xit gias* ("Laughing-geese month").—At the end of this month laughing geese begin to pass northward.

6. *Wit gias* ("Russet-back thrush (or salmonberry-bird) month").—This bird then begins to sing because winter is over.

SUMMER SERIES (SKIDEGATE)

The names of but twelve months were given me by the southern Haida at Skidegate, as follows :

1. *Ta'xet gias* ("Sockeye month").—The "sockeye" species of salmon, or one very much like it, then begins running. The month is said to correspond to March. Then the varied thrush or "swamp robin" (*sk!ā' xiao*) begins to whistle, humming birds and wasps begin to appear, and children begin to sing "summer songs." Children are not allowed to sing summer songs before this month, lest a fall of snow be brought on.

2. *gē'tga q!ā'-idas* ("Between month").—The name of this month is explained by that of the intercalary month in the Masset series. Then black-bears come out on the shore, the sparrow

(*tc!a'tc!a*), the murrelet (*scenxā'na*), and the *ha'dja* all come to lay their eggs; geese fly northward across the islands, fish begin to spawn, and grass begins to grow.

3. *Wit'gias* ("Russet-back thrush (or salmonberry-bird) month"). — In this month hair-seals are born, sea-gulls and a bird called *ʔagua'djî* lay their eggs, and, since the water is calm, boys begin playing with their toy-canoes.

4. *cān calā'ñ qoans* ("Many ripe berries"). — Then berries are ripe and eggs are hatched.

5. *Wa'ʔgal qoans* ("Many potlatches"). — Then potlatches were made, and hump-back salmon jump in the sea before making for the creeks.

6. *Haʔwa'l qoans*. — This means that many salmon were then dried, for at that time they run into the creeks. A small night owl also begins to hoot during this month.

WINTER SERIES

1. *Xo'lgao qoans*. — These words mean that the salmon then jerk about in the creeks to let their eggs out. Then silver-salmon run, a little snow can be seen on the mountains, there is some frost in the morning, water steams a little at the surface, and the white-crested cormorant (*scēt-gu'nda*) comes to the islands.

2. *Q!ā'gana gias*. — *Q!ā'gana* is the word for that part of a halibut near the gills and next to the back-bone. Probably many of these fish were then taken. Then the buffle-head duck also comes down upon the water, people move back from their camps and dig tobacco or potatoes, boys plays with bows and arrows. (I was told that there was formerly plenty of fine weather during this month, but that it has now changed.)

3. *K!is'als*, said to be a contraction of *k!is q!als* ("Empty entrails"). — This refers to the animal intestines in which salmon-eggs and grease were kept. Then the days are noticeably shorter, halibut have eggs in their bodies, and toward the end black-bears begin to hibernate.

4. *Qoñgia'di ca'das*. — This signifies that the food was then almost gone, though what the separate words mean is unknown. Then halibut spawn, and toward the middle of the month people begin to see fur-seals on the western coast.

5. *Sqagcō'ñ gida's* ("Young fish"). — In this month black-cod spawn, the birds called *hadja* are first seen by people out fishing, cormorants first show white spots near the tail, and, the food being used up, the people begin to move to their camps. Then they lived on nothing but sea eggs.

6. *Sqagcō'ñ q!ā'-ias* ("Old fish"). — During this month the sunshine begins to get hot, grouse begin to drum, a bird called *sca'dawa* appears, and halibut become so hungry that, merely as a figure of speech, it used to be said that they could be caught with hooks baited with spruce roots.

Only a rough agreement is to be expected between the Haida months and those English months to which they are said to correspond. A list made by the Rev. J. H. Keen, former missionary of the Church Missionary Society at Masset, agrees very well, however, with that obtained by me, both in the sequence and as to the English months with which they are identified. The main differences are that only twelve names are enumerated by him, *Qōñqō'ns* being omitted, that *Wā'ajgwalga-i* is called *Ān-kōng-as* (*ʔān qōñd's*), "berry month," and that *Q!ē'daq!edas* is placed just before *Sʔān gias* instead of between the summer and winter series. This last displacement may indicate that the "Between month" could be inserted anywhere.

It is evident that, as soon as the sequence of natural phenomena ceased to be closely observed, a contingency likely to follow closely upon contact with white men, these names would tend to get out of place. A comparison of the Skidegate and Masset terms confirms the suspicion, for the *Wit gias* of the former falls in May, that of the latter in March; the Between month of the former in April, that of the latter in October-November. According to one name applied to it, it would also seem as if the first of the summer months at Masset (April) corresponded to the second of the Skidegate winter series (October). Perhaps the double name for this month at Masset may have been due to the crowding together of two.

The lists agree, however, in beginning their count at about the same time, March or April, and in dividing the months into two series of six each. It is said in the Raven story that, when Raven had

thrown the moon up into the sky, he called a dog and said to him, "Shall I make four moons?" But the dog wanted to have six. Then Raven said to him, "What will you do when spring comes on (and the food is almost gone)?" And the dog said, "I will move my feet in front of my face," as dogs are said to do when they are hungry. So Raven established six moons in each series.

At Skidegate the six lowest tides accompanying full moon in each of the summer months also received names. These are:

1. *Nañ at xa' pīyas* ("The one people think is the main one," though it is not).

2. *xi' tdjixuas* ("The geese are flying north").

3. *Ldāñā gias* (The one when "young hair seals" come out).

4. *ca-a'ns*. This signifies that the whitish seaweeds far down in the ocean are left dry, for this is the lowest tide of all. People who have lost things in the sea then go to look for them.

5. *ṭkia'gials* ("Fire-drill outside"). This probably means that it is then too warm to need a fire indoors.

6. *Dv'la q'a-it!d' galas* ("Sandhill cranes break a round thing by treading upon it," perhaps meaning that the sandhill cranes dance at this time).

At Masset the low tides are said not to have been named, but Raven gave names to two of the high tides in spring. The new-moon tide at the end of the first summer month was called *a'ane*, which signifies "the one before the big one." It was thought that deaths would always occur at this high tide. The high tide on the full moon following the above was called *Tcao a'ninas*, which probably means that the shell-fish were then deeply buried under the ocean. Raven ordained that this tide should be the highest.

BOOK REVIEWS

Nineteenth Annual Report of the Bureau of American Ethnology to the Secretary of the Smithsonian Institution, 1897-98. By J. W. POWELL, Director. In Two Parts. Washington: Government Printing Office. 1900 [1902]. Part I, xcii, 568 (+ 569-576) pp. Part II, 571-1160 pp. With 79 plates, 48 figures.

This is one of the most varied in scope and valuable in content of the Bureau Reports, treating, as it does, of mythological, historical, archeological, paleographic, psychologico-linguistic, religious, and economic subjects, and representing many investigations in diverse parts of the Amerindian field. Besides the sketch of work accomplished and in progress and the usual characterization of the papers published, the section devoted to the administrative report contains (pages lv-xcii) also Major Powell's suggestive discussion of "Esthetology, or the Science of the Activities Designed to Give Pleasure," which has appeared in practically the same form in the *American Anthropologist* (1899, N. S., 1, 1-40). The accompanying papers are: "Myths of the Cherokee" (3-548), by James Mooney; "Tusayan Migration Traditions" (573-634), by Jesse Walter Fewkes; "Localization of Tusayan Clans" (635-653), by Cosmos Mindeleff; "Mounds in Northern Honduras" (655-692), by Thomas Gann; "Mayan Calendar Systems" (693-819), by Cyrus Thomas; "Primitive Numbers" (821-851), by W J McGee; "Numeral Systems of Mexico and Central America" (853-955), by Cyrus Thomas; "Tusayan Flute and Snake Ceremonies" (957-1011), by Jesse Walter Fewkes; "The Wild Rice Gatherers of the Upper Lakes" (1013-1137), by Albert Ernest Jenks.

Mr Mooney's "Myths of the Cherokee," illustrated with twenty plates (portraits chiefly, but including two maps, the Cherokee alphabet, and sketches of the petroglyphs at Track-rock Gap, Georgia) and two figures, is a monograph which fully sustains the author's reputation as an ethnologist and adds much that is both new and interesting to our knowledge of this important branch of the Iroquoian stock. Exclusive of a brief introduction, this article consists of the following sections: Historical sketch of the Cherokee (14-181), Notes to the historical sketch (182-228), Stories and story-tellers (229-238), The myths (239-427),

Notes and parallels (428-505), Glossary of Cherokee words (506-548). The history of the Cherokee, as sketched by Mr Mooney, records some striking facts. Unlike many primitive peoples, the Cherokee exhibit no insuperable neophobia. Indeed: "Owing to the Cherokee predilection for new gods, contrasting strongly with the conservatism of the Iroquois, their ritual forms and national epics had fallen into decay, even before the Revolution, as we learn from Adair. Some vestiges of their migration legend still existed in Haywood's time [1823], but it is now completely forgotten both in the East and in the West" (p. 20). This trait of the Cherokee is further attested by the early introduction among them of "the first things of civilization," though the cow and the hog seem to have found much disfavor.

A rebellion of the conservative element in 1828 (mentioned by Mr Mooney for the first time in print) under White-path against the new *régime* implied by the adoption of the white man's culture indicates, however, that neophilism had not absolutely plain sailing all the time. Later on, more than one distinguished Cherokee averred that his people were suffering from "too much white man." The removal of 1838 was a pathetic tragedy,—"even the much-sung exile of the Acadians falls behind it in its sum of death and misery" (p. 130). Among the Cherokee of Indian Territory the famous Ketoowah secret society has been the strenuous advocate of autonomy. Of the Eastern Cherokee, the remnants of those who clung to their old home country, Mr Mooney says (p. 181): "The majority are fairly comfortable, far above the condition of most Indian tribes, and but little, if any, behind their white neighbors. In literary ability they may even be said to surpass them, as, in addition to the results of nearly twenty years of school work among the younger people, nearly all the men and some of the women can read and write their own language." Here, still, "the older people cling to their ancient rites and sacred traditions, but the dance and the ball play wither and the Indian day is nearly spent." In 1898 the Cherokee of Indian Territory numbered 26,500, the Eastern Cherokee, 1351. Mr Mooney writes with sympathetic eloquence of A'yûñ'ini, or "Swimmer," from whom nearly three-fourths of the stories here published were obtained. He died March, 1899, aged about sixty-five years, and "with him perished half the tradition of a people." He spoke no English and "to the day of his death clung to the moccasin and turban, together with the rattle, his badge of authority" (he was priest and doctor, as well as "a genuine aboriginal antiquarian and patriot"). He was an ideal coadjutor for the white man of science. The myths of the Cherokee recorded here by Mr

Mooney consist of fourteen cosmogonic myths, twenty quadruped myths, fourteen bird myths, fourteen snake, fish, and insect myths, twenty-five wonder-stories, twenty-four historical traditions, and fifteen miscellaneous myths and legends including plant-lore (pp. 420-427). The "Notes and parallels" and the Glossary contain much valuable explanatory and comparative matter.

The Cherokee genesis myth is but a fragment with some admixture of Bible ideas; a curious item is the reduction of the multiparous character of the first woman. The fire-stealer is the water-spider. The myth of the origin of corn and game has a Pandora-like incident. Disease is the result of the animals' revenge on man, and medicine comes from the sympathy shown him by the plant world. In the deluge myth the dog warns the man. In the animal myths the most prominent figure is the rabbit, "always as a trickster and deceiver, generally malicious, but often beaten at his own game by those whom he had intended to victimize." The bat and the flying squirrel are still invoked by the ball players on account of their dodging qualities. The buffalo, like the dog, hardly appears in Cherokee folklore. The deer figures much in myth, folklore, and ceremonial. The bears are transformed Cherokee. The wolf is the watch dog of Kanāti, the first man. The fox does not appear in the tribal folklore. The Cherokee observation myths relating to animals and other creatures are very interesting, particularly those concerning the opossum, squirrel, mink, buzzard, fly catcher, turkey, bull-frog, etc. The great sacred bird is the eagle. The raven is not very prominent and the crow does not appear. Owls are of ill-omen. The buzzard figures in the genesis myth. The chickadee and titmouse are news-bringers, the latter a liar. The rattlesnake was once a man. The land tortoise is prominent in myths. The water-beetle figures in the genesis story. Bees seem to have no folklore connected with them, nor have the firefly and the glow-worm, while the spider appears in but one myth. In the wonder-stories the chief figures are Uñtsaiyi' (the gambler), Tlá'nuwā (great mythic hawk), U'tlūñ'tā (the spear-finger, an ogress), Nūñ'yunúwi (the stone man), the enchanted lake, the bride from the south, the ice man, the underground panthers, the Tsundigéwi (little people), the bear man, the great leech, the spirit folk, Tsul'kálú' (the slant-eyed giant), the thunders, the water-cannibals, etc. The historical traditions do not contain as much evidence as one might reasonably believe of the fact that "the Cherokee have been the most important of the southern tribes, making wars and treaties for three centuries with Spanish, English, French, and Americans, Iroquois, Shawano, Catawba, and Creeks." This, the author

suggests, "may be due in part to the temper of the Cherokee mind, which, as has been already stated, is accustomed to look forward to new things rather than to dwell upon the past." Among the miscellaneous items are some brief tales representative of Cherokee humor and a few charming bits of folklore relating to children. The Cherokee names of plants prove them to be close observers and clever manufacturers of terms, as may be seen from the names of the mistletoe ("it is married") and the black-eyed Susan ("deer-eye"). The cedar is the sacred tree. A characteristic myth explains the distinction between evergreen and deciduous trees. Corn ("the old woman") is the most famous of all plants and is very prominent in ceremonies. The local legends of the Cherokee country are most numerous in western North Carolina. The really sacred myths were known only to initiates. The shorter animal myths "have lost whatever sacred character they may once have had, and are told now merely as humorous explanations of certain animal peculiarities." In the Cherokee myths the animals "were larger and of more perfect type than their present representatives," who are not their descendants, but only weak imitations (the mythic animals being now in the world above). The mythic animals "mingled with human kind upon terms of perfect equality and spoke the same language." The resemblance (identity even) between certain Cherokee myths and some of the "Uncle Remus" stories (rabbit tricks, tar-baby, etc.) may be due, Mr Mooney holds, with reason, to borrowing from the Indians by the negroes, for, "it is not commonly known that in all the southern colonies Indian slaves were bought and sold and kept in servitude, and worked in the fields side by side with negroes up to the time of the Revolution" (p. 233). The attribution of the origin of such animal stories to the negroes is "due largely to the common but mistaken notion that the Indian has no sense of humor." In connection with the phenomena of contact Mr Mooney rightly warns us against assuming that "every tale told in an Indian language is necessarily an Indian story." We must never forget that "scores recorded in collections from the north and west are nothing more than variants from the celebrated Hausmärchen, as told by French trappers and voyageurs to their Indian campmates and half-breed children." Indeed the trapper and the voyageur have exercised a more powerful influence in this way than has the missionary with his Bible. The admixture of blood of many other tribes makes it somewhat venturesome to accredit even the majority of the myths to the Cherokees as creators. While some vulgar and obscene tales exist, "as compared with those from some other tribes the Cherokee myths are clean." From a literary and dramatic point of

view some of them are deserving of more than passing notice, and Mr Mooney is quite justified in observing that "for picturesque imagination and wealth of detail they rank high, and some of the wonder-stories may challenge those of Europe and India." The name *Cherokee*, which appears in fifty spellings, "is in all probability of Choctaw origin, having come up from the south through the medium of the Mobilian trade jargon." It probably refers to the fact that this people occupied a cave country (some names applied to them by other tribes hint this also) and may be identical with the much-discussed *Talligewi* or *Alligewi*, in meaning at least. The name by which the Cherokee call themselves is *Yûñ'wiyă'* or *Ani'-yûñ'wiyă'*, "real people." A brief review cannot at all indicate the wealth of information to be found in Mr Mooney's monograph, both of native lore and of white man's philosophy. The "Swimmer" has certainly no reason to find fault with his friend and interpreter.

Dr Fewkes' first paper, "Tusayan Migration Traditions," which is furnished with numerous tables of clans and societies, treats briefly of the Hopi pueblos, the clans living or extinct in Walpi and Sichumovi, the chronologic sequence of the advent of clans, clans from Tokonabi, clans from Palatkwabi and the Little Colorado pueblos, clans from Muiobi and New Mexican pueblos, total membership of Walpi and Sichumovi clans, Hano clans, religious societies at Walpi, Katsina cults from New Mexican pueblos, the East Mesa rituals. The historical account of Walpi here presented is drawn from legends gathered mainly from the Hopi clans now living in the East Mesa villages—Walpi and Sichumovi, the former of which "is regarded as the most ancient Tusayan pueblo, its settlement dating from before the middle of the sixteenth century." The advent of the Spaniards does not seem to have made a lasting impression on the Hopi, for "no account of the first coming of the Europeans is preserved in their stories." Nevertheless "the lasting benefit of the Spanish *régime* was the gift of sheep, horses, goats, burros, and various fruits and seeds," the names of which are mainly corrupted Castilian. The chief conclusions reached by Dr Fewkes are: The pueblo of Hano (Tanoan in language and culture) was transplanted from the upper Rio Grande valley to the East Mesa of Tusayan,—“its religion is intrusive, and its ritual resembles that of Walpi only in those features which have been brought by kindred clans from the same region.” The religious ceremonies of Sichumovi are also intrusive from the east (language Hopi, ritual purely Tanoan), and "the rituals of Sichumovi and Hano are allied to those of certain New Mexican pueblos. The pioneer settlers of Walpi were Snake and Bear clans, the former predominating, and the majority of the clans

and the most distinctive ceremonies in the Walpi ritual came from southern Arizona. That the present Hopi are descended wholly from "nomadic people from the north" is doubtful, and "some parts of the ritual which are distinctly Hopi are found not to have come from the north but from the south."

Dr Fewkes' other paper, "Notes on Tusayan Snake and Flute Ceremonies," is illustrated with twenty-one plates and five figures. The subjects treated are: Snake dance at Mishongnovi in 1897; Snake dance at Walpi in 1897; The most primitive Snake dance; Flute ceremony at Mishongnovi in 1896; Flute ceremony at Walpi in 1896. The Snake dance (now of world-wide celebrity) and the Flute observance are two of the most important summer ceremonies in the elaborate ritual, performed for the purpose of bringing about abundant rains and successful crops by the Hopi (Moqui) Indians of Arizona. The description of the Snake dance at Mishongnovi "completes the account of the general features of this ceremony in the five Tusayan pueblos." Of these Snake dances that of Walpi is the largest and most complex, while those of Oraibi and the Middle Mesa "are nearer to the ancestral form." The Tanoan element has acted as a liberalizing element at Walpi and Sichumovi, leading to the adoption of new secular customs, and the influence of this is discernible in the rituals. The description of the Flute ceremony at Mishongnovi "supplements those already given and adds to our knowledge of the rites of the Flute society in the largest village of the Middle Mesa." The Mishongnovi Flute altars differ from those of Oraibi in several particulars. At the Walpi Flute ceremonies of August 12, 13, 14, 1896, Dr Fewkes found "considerable variation from those performed on the same relative days of 1892." The signification of these divergences is not known. The Snake and Flute observances bear evidence as to the composite character of Hopi ritual (the clan units are more visible here than elsewhere in Tusayan life). The Snake dance is "a celebration or worship of the cultus hero and clan mother of the Snake clan, but not of the great plumed snake, which, the legends say, was introduced by the Patki clans from the south." It is rather a worship of the ancestors of the Snake clans, therefore, than a form of snake worship. Its present purpose is "primarily to bring rain and thus to promote the growth of corn." The psychic element back of it is, Dr Fewkes thinks, "totemic ancestor worship, which is fundamental in the whole Hopi ritual." Dr Fewkes' careful and thoroughgoing studies of Tusayan social and religious life make altogether a remarkable presentation of the effect of environment on primitive ceremonial expression. We have, probably, for no other people, such a picture.

Mr Cosmos Mindeleff's paper on "Localization of Tusayan Clans," with eight plates and one figure, treats of the interesting and important question of the connection of the peculiarities of ground-plan with the enormous number of ruins scattered over the pueblo country, their variety, etc. The author develops his theory that the multitude of ruins finds its explanation "in the extended use of outlying farm settlements," of the ancient and modern employment of which there seems to be considerable evidence. In the earliest stages of the growth of pueblo architecture, it is probable that none of the tribes of Athapascan stock, whose advent later had much influence upon it, were yet in the country. Through the need of protection from the forays of such tribes the great pueblos developed, and "under modern conditions, when the depredations of the wild tribes have been terminated by the interference of a higher and stronger civilization, the houses are reverting to the primitive type from which the great pueblos developed." The data at our disposal enable us to determine the cultural rather than the chronological development of pueblo architecture. Another fact which the author emphasizes, is that "in the pueblo country migration was almost an individual movement; it was hardly a tribal, certainly not a national exodus." The factor of "unconscious drift" also played its part. Neither the multiplication of pueblos nor the addition of rooms meant necessarily increased population. The extension of the ground-plan of a house suggests different conditions than those indicated by the compactness evidenced by the addition of small rooms to the upper stories. The relation between number of dwellings and actual population was probably no closer than that between camp sites and inhabitants in the Algonquian-Iroquoian region of New York.

Dr Thomas Gann, in his "Mounds in Northern Honduras," with ten plates (paintings and effigies) and four figures, gives an account of the construction and contents of sixteen mounds near Corozal in northern British Honduras, explored since 1896, — at that time some thirty-two of the original number were intact. Some of the mounds were constructed over buildings whose external walls were covered with painted stucco figures and hieroglyphics of great interest and importance. From others many painted pottery animals, etc., were obtained. The mound-covered temple, the author thinks, was erected toward the end of the fourteenth or the beginning of the fifteenth century, and the Indians who constructed the temple themselves "destroyed" it by covering it up with earth, in order, perhaps, to preserve it from Spanish vandalism. The stucco-figures "resemble, perhaps, more closely the bas-reliefs of Palenque

and Lorillard City than those of Yucatan and Honduras," and the style and mode of execution of the buildings are "more like those of the builders of the cities of southeastern Mexico." With these they were probably more nearly contemporaneous. The author seems to use Maya and Toltec as like terms, which is not altogether advisable. It is to be hoped that these important investigations will be continued, since they are of great significance in relation to the question of the age and continued use of Mayan monuments and graphic records.

Dr Cyrus Thomas' first paper, "Mayan Calendar Systems," illustrated with six plates and sixteen figures, treats, with more or less detail, of the time series in the codices and inscriptions (Dresden Codex, Palenque, Tikal, Copan, Piedras Negras), Mr Goodman's system of Mayan chronology, initial series, numeral symbols in the codices, etc. The author reaches the conclusion that "the Maya of Yucatan represent the original stock, or they have retained with least change of any of the tribes the names and time system of the calendar, except as to dominical days." Dr Thomas does not accept Mr Goodman's estimate of the extremely long period of existence of the Mayan stock, though they were evidently, at a rather remote date, a more or less homogeneous people.

The second paper by Dr Thomas, "Numeral Systems of Mexico and Central America," is a valuable psychologico-linguistic study of the primary numbers and numbers above ten in the languages of the Nahuatlans (Aztec, Sonoran, Shoshoni, etc.), Othomian, Zoquean, Tarascan, Chiapanecan, Tolonacan, and Mayan families, with miscellaneous lists from the non-Mayan regions of Central America. Pages 934-948 deal with numbers in the Mexican codices, and pages 948-955 with the mystic and ceremonial use of numbers. According to Dr Thomas, "the evidence is clear that the Maya, or at least the priests or authors of the Dresden codex and the inscriptions, could, and actually did, carry their computations to the millions, in terms where the number element was necessarily retained, where the primary unit—in these instances the day—had to be kept in view; of course they made use of the higher units to facilitate counting, as we do at the present day." But in some of the native counts the influence of the European decimal system is seen. The vigesimal system is in North America practically confined to the "Pacific section," which is of interest in connection with its prevalence in northeastern Asia. Dr Thomas agrees with Conant in holding that environment exerts no appreciable influence in determining the system. It also appears that "the Aztec or Mexican tribes by whom the codices were made were not so well advanced in mathematics and time count, or in

the symbolic designation of numbers, as the Mayan tribes." In the Mayan country a lunar count has evidently preceded the twenty-day period of later times. In mythology and ceremonials, 4 and 5 are prominent numbers, 7 less so. In the time systems, 20 and 13.

In his "Primitive Numbers," Dr W J McGee treats briefly, in a characteristically suggestive fashion, of the place of numbers in the growth of knowledge, features of primitive thought (mysticism, egoism), primitive counting and number systems (numeration, notation, and augmentation), germs of the number-concept, modern vestiges of almacabala the folk-antecessor of mathematics. All primitive men, Dr McGee holds, are mystics and egoists, and "concordantly with self-centered language, primitive arts and industries are conspicuously egoistic." Primitive belief too is the expression of egocentric thought. The primeval face-back ego passes through a cult of the halves to a cult of the quarters (the transit here marked a considerable intellectual advance). The quatern notion producing the cult of the quarters results from the superposition of right-left upon face-back. The mythological and ceremonial connotations of these ideas are full of interest. The three prescriptorial number-systems (2-3, 4-5, 6-7) define the course of intellectual development of lower men. As almacabalic vestiges we have 2 in Aristotelian classification and Chinese philosophy; 3, well-known of old-time, "pervades nine-tenths of modern literature and all modern folklore"; 4 and 5 are of importance in cosmogonic lore; 6 and 7 bridge over the way from almacabala to mathematics; 9 is classical and mathematical; 7 and 13 are of great ill omen, and larger mystical numbers abound in the Orient. The "barbaric Roman notation, which barred arithmetical progress for ages, even today saps vitality by its crude extravagance of form and function."

Dr Jenks' monograph on "The Wild Rice Gatherers of the Upper Lakes," with fourteen plates and two figures, is a useful study in primitive economics and the relation of food to human biotic expression. The seven chapters treat of: Botany (scientific names, popular synonyms; etymology of *manômin*, scientific description, natural enemies); habitat; rice-Indians (Ojibwa, Dakota, Menomini, Sauk and Fox, Winnebago, Potawatomi, Maskotin, Assiniboin, Kickapoo, Ottawa, Huron); production; consumption; general social and economic interpretation; influence of wild rice on geographic nomenclature. Pages 1126-1133 are occupied by a bibliography. The Algonquian *manômin* means "good berry," and it is otherwise numerously named, as the list of sixty synonyms given by Dr Jenks indicates. Ten pages are devoted to the enumeration

of geographic names commemorative of this plant, and the author observes further that "more geographic names have been derived from wild rice in this relatively small section of North America than from any other natural vegetal product throughout the entire continent." The value of wild rice to the Indian is seen from the comparatively dense population of parts of the region (sections of Wisconsin and Minnesota were "an Indian paradise") and the greater physical and economic well-being of the inhabitants, as reported by early writers. The use of wild rice passed from the Indians to the intruding whites, and even in 1896 "wild rice was offered for sale in several towns in Wisconsin and Minnesota." In the earlier days, as Henry records, voyages beyond the Saskatchewan were possible only with a good store of wild rice. It is a curious fact, commented upon by the author, that the use of wild rice is not mentioned by the Jesuit fathers until 1634, suggesting that in certain districts at least "the Indians did not use wild rice until scarcity of game, caused by the fur trade with the whites, drove them to it." Hence it is only for a few hundred years, in all likelihood, that wild rice has been gathered in large quantities. A number of the Indian tribes named one or more months after the wild rice, and the periods of the wild-rice harvest were often gala times. The Menomini Indians, named after the rice, "are more deeply influenced by wild rice than are other wild-rice producing Indians." The Dakota had a unique rice-feast. The Assiniboin and the Ojibwa sowed wild rice, but the Menomini will not, since, as their legends relate, Manabush ("the Great Spirit") told their ancestors they should always have it. Ojibwa traditions suggest that these Indians first found wild rice on the Red River of the North, "as far west as they ever dwelt," whence it was distributed eastward.

ALEXANDER F. CHAMBERLAIN.

Unknown Mexico: A Record of Five Years' Exploration Among the Tribes of the Western Sierra Madre; in the Tierra Caliente of Tepic and Jalisco; and among the Tarascos of Michoacan. By CARL LUMHOLTZ, M.A. New York: Charles Scribner's Sons, 1902. 8°, two volumes, pp. i-xxxvi, 1-530; i-xvi, 1-496; with many illustrations, including 15 colored plates and two folding maps.

This is a notable contribution to American anthropology. Under the auspices of several institutions and individuals (the American Geographical Society, the American Museum of Natural History, Mr and Mrs Morris K. Jesup, Duc de Loubat, Mr Andrew Carnegie, and Mrs Elizabeth Hobson are especially credited), but supported chiefly by his own com-

mendable zeal and pertinacity, Dr Lumholtz traversed the least known and most inaccessible districts of Mexico from the northern boundary in Sonora to the Tarasco country lying west of the Capital city ; and although he set out with a large party this was gradually disbanded, so that most of his journeys were made without Caucasian companions, giving him unexcelled opportunities for leisurely and thorough study of some of the least known tribes of North America. That these opportunities were well utilized is attested by over a dozen earlier publications, including the noble monograph "Symbolism of the Huichol Indians," published by the American Museum of Natural History, in 1900 ; while conclusive evidence of the author's interest and ability in research is afforded by the present volumes, which form at once an itinerary and a compendium of results of the work.

In eastern Sonora and western Chihuahua Dr Lumholtz discovered numerous vestiges of the prehistoric inhabitants, including trincheras (entrenchments) and fortresses, house walls of rough stone, and habitations in niches (or "rock-houses") in the faces of cliffs. Rather unfortunately, in view of a prevailing tendency to regard caverns as primordial human homes, these habitations are styled "cave houses," a designation that might well serve to strengthen our language by initiating a verbal distinction between strictly subterranean *caverns* and those open niches or *caves* for which the language lacks a better term than the impossibly awkward one "rock-houses"; otherwise Dr Lumholtz' phrase can hardly fail to prove misleading. Many of the niches in the stupendous cliffs and barrancas of the northern sierra were converted into comfortable dwellings by the erection of front and side walls of an adobe or residual earth accumulated in the niches, and requiring nothing more than wetting, molding, and air-drying to convert it into durable bricks ; most of them contain granaries, made by twisting long grass into a cable, winding this in a spiral coil of the desired size and form, and plastering inside and out with the adobe ; some niches showing no indications of residence were used as burial places, and in certain of these were found mummies, whose characters resemble those of the Hopi Indians, together with mortuary objects of much significance.

In the sierra and on the eastern slopes most of the trincheras are in the form of walls laid across ravines in such manner as to convert them into series of terraces, evidently used as fields or gardens. Mortuary mounds occur in the same region, and yield stone and earthenware relics ; while petroglyphs abound. The pottery here and at Casas Grandes is distinctive, yet reveals a significant blending of southern and more north-

erly motives. Passing southward into the Tarahumare country, Dr Lumholtz found these Indians retaining many aboriginal traits despite a veneer of imported culture ; a wooden plow is used, with a share of oak or stone ; there are a few cows, burros, and other European stock, and manta and other fabrics from the white man's loom are worn ; yet the pine-cone serves as a comb, the bow and arrow are in constant use, hats and baskets, belts and blankets are woven in the native way, and the breech-cloth is *en regle* even if of imported material and worn outside a white man's suit.

The social observances are largely aboriginal. In the depths of the barrancas the tribesmen still occupy cliff-niche domiciles and cultivate terraces held in place by trincheras, both corresponding with the prehistoric structure farther northward ; and the author's detailed observations on these dwellings and their occupants form a signal contribution to knowledge of primitive life in one of its phases. Both industrial operations and ceremonies are essentially communal ; the clearing, planting, or harvesting of a field gives occasion for an orgy of work and feasting, including large consumption of *tesvino* (a widely used fermented beverage), accompanied by processions and dances ; while the invocatory preparation for hunting is a foot-race in which the runners throw a ball of stone or wood with the foot, covering almost incredible distances (a race-course near Carichic is fourteen miles long, and may be circled twelve times without stopping). Courtship and marriage are attended by ceremonies and the drinking of *tesvino* (indeed the author concludes "that by means of *tesvino* chiefly the race is kept alive and increasing"), and there is a foot-race for women, much like that of the men save that a stick is used to throw the ball, which seems to be an invocation for fertility.

The chief deities are the sun and the moon, while the morning star, deer, crow, blackbird, puma, coyote, fox, rabbit, and especially the rattlesnake and a mythic serpent are prominent in their pantheon ; shamanistic treatment of the sick prevails, and trephining has been successfully performed ; rainfall is sought to be controlled by thaumaturgy ; dancing is a form of worship thought to have been learned from the animal Ancients, the *rutuburi* from the turkey and the *yumari* from the deer, and extravagant sacrifices are made in connection with these ceremonies. As in certain other tribes, the devotional spirit is intensified by toxics, especially the *hikuli*, or peyote (a cactus containing alkaloids which serve as stimulants and produce color-phantasms), and the collection and use of these is attended by elaborate ceremonies ; even the *tesvino* intoxication is devotional, as it is in more decided degree in the

neighboring Tepehuane tribe. Belief in transmigration prevails, and the fear of shades is pronounced; on the death of a tribesman the relatives separately give final greetings to the body, which is surrounded with food, partly to determine from tracks into what animal the life of the deceased has passed; later the remains are buried in shallow graves or cliff-niches, with beans, corn, tesvino, bow and arrows, hikuli, etc., while the bedding and heavier possessions are buried elsewhere and the house, metate, and many jars and baskets are destroyed. Within a fortnight there is a mourning feast, a second follows half a year later, and the most important one at the end of a year; though for women there are four mortuary feasts.

From the Tarahumare country Dr Lumholtz passed into that of the nearly extinct Tubar tribe, and thence into the neighboring Tepehuane range, continuing his studies with unabated care and success, and finding both social and devotional customs of extreme interest. Later he pushed on southward into the Cora, Huichol, and Tepecano countries in western-central Mexico; and especially in the Huichol tribe his researches were even more richly productive than among the more northerly peoples. Finally he made a more hasty study of the Tarasco tribe, where he gained considerable information concerning aboriginal industries, beliefs, and social customs, and investigated prehistoric *yacatas* (structures of stone and earth, chiefly mortuary) with the relics contained within them, these being of no small interest as of a type intermediate between those of southern Mexico and those of more northerly regions. The study of the Huichol Indians proved remarkably instructive; their elaborate ceremonies, including the long journeys in search of a sacred intoxicant, their domestic life, their social observances, and their elaborate symbolism are of profound interest; and Dr Lumholtz' earlier announcements, coupled with his mature expressions in this and other works, may justly be said to mark an epoch in the development of knowledge concerning aboriginal Mexico.

Throughout his journeyings the author was inspired by exceptional sympathy with the natives which enabled him to gain their confidence, and actuated by unusual appreciation of the devotional sentiments controlling primitive life; so that his record is valuable as unique. The verity of the verbal record is established by numerous photographs, as well as by abundant collections preserved in the American Museum of Natural History; and the book-making is unexceptionable.

W J MCGEE.

Metallic Implements of the New York Indians. By WILLIAM M. BEAUCHAMP. (Bulletin of the New York State Museum, No. 55.) Albany: 1902. 8°, 92 pp., illustrated.

The author has made this Bulletin a valuable and welcome addition to the archeological literature of the State of New York, both preceding and during the colonial period, and what relates to New York applies incidentally, with almost equal force, to the whole eastern coast of North America as far southward as Florida and as far inland as early French and English influences extended.

By references to early authorities Mr Beauchamp shows that, at the first coming of the whites, the native Americans were possessed of numerous objects made of copper. A trade in this metal was early carried on by the whites with the natives in exchange for needed commodities, and the natives, in turn, disposed of the metal to others not in immediate contact with the Europeans. Quite a number of authors, during both the colonial and a later period, are quoted, the citation of their works forming an interesting bibliography of the subject.

Mr Beauchamp suggests that those objects of native copper which he illustrates are prehistoric, and were produced from the pure metal by a process of hammering. While such may be the case with the celts, the illustrations of arrow- and spear-heads of iron and brass with sockets similar to those found made of native copper, leave room to doubt whether the flange shapes to native copper objects are not of civilized concept. The tomahawks illustrated are interesting reminders of the fact that the Europeans supplied their red allies with a more effective instrument than the latter had earlier possessed, for in a single steel, iron, or copper hatchet and pipe, the war hatchet or club and stone pipe were combined into an effective weapon.

The numerous illustrations of the iron axes of the early colonial period, used by the whites in their Indian trade, are highly interesting. It is, however, to be regretted that a publication otherwise so excellent should be so badly illustrated; for though satisfactory in outline, the figures are flat and black, the general effect of which is to impress one with the fact that photographs would be far preferable to what is given, and doubtless would not have been more costly.

Mr Beauchamp has prepared a paper on ornaments for future publication. It is hoped that another method of illustration may be adopted, for, no matter what the process may be, any change from the present method of illustration would be an improvement.

JOSEPH D. MCGUIRE.

The Iroquois Silver Brooches. By HARRIET MAXWELL CONVERSE. (Reprint from the Fifty-fourth Report of the New York State Museum, 1900). Albany: 1902. 8°, 26 pp., ill.

The author shows, in ninety-three illustrations, neatly executed in outline, a typical collection of hammered coin brooches made by the Iroquoian Indians. The paper suggests that the designs of these pieces of jewelry are neither English, French, nor Dutch. We are somewhat familiar with modern silver work from the southwestern part of the United States, but we have here an interesting addition to the art of native silver work. In some of the objects are represented the owl, in others the eagle, and also the cross and the Masonic emblem, in addition to conventional heart-shaped ornaments, single or interwoven in duplicate. These objects are mostly made into brooches, though there are finger-rings, ear-rings, and head-bands. It can scarcely be admitted, however, that we have presented in these attractive ornaments "entire originality," or "totemic devices," or "secret symbols of the medicine-lodge," or Indian "myths" to the extent claimed by the author. The brooches represent a typical character, suggestive of European design, though containing sufficient aboriginal character to entitle them to be called "Iroquoian brooches." The paper will be a welcome addition to the study of the evolution of early silver work.

JOSEPH D. MCGUIRE.

Notes Upon the Ethnography of Southern Mexico. Part II. By Professor FREDERICK STARR, Ph.D. (Reprinted from Vol. IX, Proceedings of the Davenport Academy of Sciences.) Davenport, Iowa: Putnam Memorial Fund Publication. 1902. 8°, 109 pp. including plates.

In 1901 Professor Starr traveled among eight tribes of the distant and interesting region of southern Mexico, namely, the Aztecs in the states of Puebla, Tlaxcala, Vera Cruz, and Hidalgo; the Zapotecs of the Isthmus of Tehuantepec; the Huastecs in San Luis Potosí and Vera Cruz, and the Mayas of Yucatan, as well as four tribes affiliated with the last mentioned—the Zoques, Tzotzils, Tzendals, and Chols,—and the present work embodies the results of his observations. Of particular interest to the general reader are the author's descriptions of the native costumes and their many dances and festivals. The popular songs of the Zapotecs which Professor Starr records are of much value, the verses being accompanied by the musical notation and their English translations (pages 24-62). Mr Harry Rau's vocabulary of the Chol dialect, with definitions in Spanish and English, shows careful work. The nine pages of photographic plates illustrate toys, pottery, masks, wall-paintings, textiles, bows, and arrows.

A. S. GATSCHET.

Kulóskap the Master and other Algonkin Poems. Translated Metrically by CHARLES GODFREY LELAND, Hon. F.R.S.L., M.A., and JOHN DYNELEY PRINCE, Ph.D. New York and London: Funk & Wagnalls Co. 1902. 12°, 370 pp., ills.

This neat volume, which gives a much clearer insight into Indian thought and poetry than most books written for the same purpose, consists of a metrical version of Indian myths and legends which were recounted to the authors in the three Abenaki dialects of the northeastern part of the Algonquian area—the Penobscot of southwestern Maine, the Passamaquoddy or Melisit (properly Amalisit) of eastern Maine and St Johns river, New Brunswick, and the Micmac of Nova Scotia and the eastern coast of New Brunswick.

The stories relating to Kulóskap, Kulóskábi, or Glúskap, form a mythic cycle which has not yet been fully recorded and translated, but it is known to exhibit that charming imagery and that freshness and originality which always concentrates one's interest in a people who have been little in contact with the whites. The somber and sometimes ossianic character of some of their songs naturally recalls the cloudy winter skies of the land which produced them, yet there are many others which reflect the gladdening influence of the northland summer.

Of the two authors of the volume one is a poet and romancist,¹ the other a philological scholar, and its readers will find that the peculiar qualifications of both have successfully combined in bringing forth a book which is unique of its kind. It consists of three parts: The Epic of Kulóskap, Witchcraft Lore, and Lyrics and Miscellany. The name of the mythic hero is explained by Professor Prince as "one who is clever enough to lead his enemies astray," this being the highest virtue to the Indian mind. Kulóskap "is at once the creator and the friend of man, and, strangely enough, he made man from the ash tree." A proper translation of the cognomen is "the deceiving man," for as the genius of nature he is constantly transforming the elements, of which he assumes to be the controlling power. He is also aptly known in the songs as "Lord of Beasts and Men," "Chief of Men and Beasts," "Master of Beasts and Men who was born in the Sunrise Land."

The tales of this mythic cycle are each introduced by the set formula, "Of the olden times this tale is," and are, or aim to be, worded in an archaic form of dialect. Some of the full-page illustrations represent native drawings on birch-bark.

¹ News has been received of the unfortunate death of Mr Leland at Florence, Italy, on March 20.—EDITOR.

Two of the "creation legends" describe the naming of the principal animals by Kulóskap, and of these the loon, the black wolf, and the white wolf enjoy the distinction of being enlisted in his special service. He in turn hunts and roams around with the loons, the beaver, the serpent, the turtle, and the great bull-frog; he also goes on a whaling expedition and races with the Wind-Eagle or Wuchosen — the hurricane personified. The "Master's" intercourse with the witches and giant sorcerers forms another section of Kulóskap's adventures.

The rhapsodies of the "Witchcraft Lore" are thirteen in number, all of which deal with witches, wizards, and the irresistible powers by which all creatures submit to their will, especially the wizard snake, the measuring worm, the *P'múla* or Air-Demon, and the river-elves.

The third or miscellaneous section deals with romances about seasons, the beauty of the stars and of Indian maidens. A portion of the contents are worded in Passamaquoddy with the English translation opposite. The queerest creature treated is the Indian "Devil," or *Lòks* (the wolverine of the whites), celebrated for its gluttony and many other coarse qualities, which make of it the most detestable being of that region.

That Kulóskap always was animated by the desire to be the protector and benevolent ruler of his subjects, men and beasts, appears throughout the stories of his life, and in one part of the epic, "How Kulóskap granted gifts and favors to many Indians" (pp. 64-89), he is extolled for this quality. In a meeting called by him he notifies the loons, his faithful servants, that he would remain on earth for many years to come, and any of them might in this time have their wishes granted if they came to visit him. So one Milicite and two Penobscots from Old Town undertook this dangerous pilgrimage, which was to occupy seven years, in order to visit the "Master" personally. Near the end of their long journey the three began to hear the bark of his dogs; shortly after they found the lord of men and beasts, who entertained them well. To one of them, who never had been successful in hunting game, he offered a magic pipe with which to hold or attract animals. To another, an amorous young man, but always unfortunate in his attempts to win the love of women, he gave a bag which was not to be opened before he reached home.

Professor Prince varies the meter according to the character of the episodes which he presents. The legends are given in blank verse, but it may be generally said that his diction approaches the iambic meter. The numerous Indian terms from the three Wabanaki dialects given are defined in a copious glossary (pp. 361-370).

A. S. GATSCHET.

The Philippine Islands. 1493-1803. Explorations by early navigators, Descriptions of the Islands and their Peoples, their History and Records of the Catholic Missions, as related in contemporaneous Books and Manuscripts, showing the Political, Economic, Commercial and Religious Conditions of those Islands from their earliest relations with European Nations to the beginning of the Nineteenth Century. Translated from the Originals. Edited and Annotated by EMMA HELEN BLAIR and JAMES ALEXANDER ROBINSON, with Historical Introduction by EDWARD GAYLORD BOURNE. With maps, portraits and other illustrations. Cleveland, Ohio. The Arthur H. Clark Company. 1903. (55 volumes, 8°. \$4.00 per volume.)

To cover the scope contemplated by this noteworthy series is almost impossible within reasonable bounds, for it aims to present in a comprehensive way not only the sources of the secular and ecclesiastical history of the Philippine islands during more than three centuries after the first visit by Europeans, but the sources also for a study of their exploration, geography, ethnology, colonial administration, and in fact of every subject of which the early records treat. The work is thus second in importance only to the original documents and the early and sometimes unique prints on which it is founded; indeed to the student it is even of greater value, since it places before him translations of these historical data which otherwise would be totally inaccessible and without which no work on the Philippines could be definitive.

To the ethnologist the only means of procuring information regarding the mode of life and thought of primitive peoples during the earlier historical period is through the narratives of explorers, travelers, and missionary workers; and when the field is one that has been explored and colonized by the Spaniards, we are assured of a record rich in historical and ethnologic material. Such is the case with Peru and other South American countries, with Central America, Mexico, and those parts of our own domain first colonized by Spaniards where later vandalism has not swept away all or a large part of their archives. And such is the case also with the Philippines, or we might still be groping in the dark for that which is not. This splendid undertaking, then, is due first to a nation which possessed unbounded respect for the needs of posterity, next to a publisher who had foresight enough to know that the new possessors must awake to the need of learning what had gone before, and finally, an editorial corps thoroughly equipped with the knowledge of what was required and of sufficient experience to make the work a scholarly one.

The historian, the geographer, the economist, may justly regard this

remarkable compilation as of greatest importance from his respective point of view, yet it can be of no greater utility to them than it will prove to be to the ethnologist whose attention has been awakened to the rich field of study which the Philippines offer and for which an insular bureau has been established. Knowledge of the early natives has been practically wanting. Their languages have been classified, a wealth of books in the native dialects has grown up, and much of an authoritative character has been written on their present-day customs — after generations of contact and intermarriage with Europeans and Asiatics, with the modifications that these are always bound to bring about. Barring a relatively few accessible works bearing on their barbarous condition, students have had practically no means of knowing the Filipinos as they existed at the time of Magellan and for years later; and herein lies the value to him of the present great collection. Not only have the archives of Madrid, Simancas, and Seville in Spain been searched for manuscripts pertaining to the Philippines, but research has been conducted also in Portugal, France, England, Italy, and Mexico, with rare industry and at great expense, to bring to light everything of importance that tends to enhance knowledge of conditions in the islands during the long period covered by the work. As a rule only translations of the documents will be given, but some of the earlier chronicles and rare prints will be presented bilingually.

In the three volumes that have thus far been published appear the documents regarding the famous Line of Demarcation, — the Papal Bulls of 1493, 1501, and 1514, with the correspondence, treaties, compacts, and instructions arising from them, — papers relating to the life and voyage of Fernão de Magalhães, or Magellan as he is commonly called (three of which appear in bilingual form); a résumé of contemporaneous documents bearing on the expeditions of Loaisa (1525-26), Saavedra (1527-28), Villalobos (1541-43), and Legazpi (1564-68), — among the latter being a republication, with translation, of the *Copia de una Carta venida de Sevilla á Miguel Salvador de Valencia*, published at Barcelona in 1566, of which only a single copy is known to exist. The third volume contains some thirty documents covering the years 1569-1576, giving valuable information on the exploration, administration, and condition of the archipelago and its inhabitants during that period.

The Historical Introduction (vol 1, pp. 19-87) bears the name of Prof. Edward Gaylord Bourne of Yale University, which is sufficient guaranty of its scholarly character. For an introduction so brief it is a remarkably comprehensive review of Philippine history, and is so fairly

and charmingly presented as to be worthy of careful perusal by everyone interested in these far-away possessions. The Bibliographic Data accompanying each volume are carefully prepared and are useful to the investigator. The illustrations thus far consist principally of portraits, maps (including a large modern map of the islands and some facsimiles), autographs, and other interesting historical subjects.

The editorial work is in able hands. Miss Blair, it will be recalled, was chief assistant to Mr Reuben Gold Thwaites in the compilation and annotation of *The Jesuit Relations and Allied Documents*, and her experience in this work makes her eminently fitted for her part in the present task. Mr Robinson has been personally engaged in directing the researches of collaborators abroad and in visiting many of the archives. The published volumes and the list of documents promised for the subsequent ones amply attest the success which has met his efforts.

F. W. HODGE.

Tagalen und Madagassen. Von Prof. Dr RENWARD BRANDSTETTER. Zweite Reihe, II. Luzern: Doleschal, 1902. 8°, 86 pp.

This pamphlet is one of a series devoted to investigations of the Malayo-Polynesian linguistic family. The complete study is divided into two series, as follows:

Series I.—I, Naturism in the old literary works of the Malays. II, The relation of Malagasy to Malay. III, History of Hang Tuwah, an old Malay customary romance (in German). IV, History of King Indjilai, a Bugi tale (in German). V, The foundation of Wadjo, a historic saga from southwestern Celebes (in German). VI, Borrowed words in Bugi.

Series II.—I, History of Djajalankara, a Macassar romance (in German). II, Tagal and Madagassen, a study in comparative philology for ethnographers and linguists. III, Attempt to fix the place of the southern Philippine idioms within the Malayo-Polynesian family.

It is a well-known but likewise puzzling fact that the Malay-Negro people of Madagascar all speak pure Malayo-Polynesian without any mixture of Hindu or other foreign language save a little Arabic. It follows that the movement of this brown people three thousand miles away from their kindred took place from two thousand to four thousand years ago. Doctor Brandstetter sets out in the present pamphlet to compare the Malagasy after this long parting with the Tagalog of southern Luzon.

The results of these minute and extended studies cannot all be given here. The two languages differ as the separate members of one of our American families, and if they both sprung from one mother speech the Tagal is older.

O. T. MASON.

PERIODICAL LITERATURE

CONDUCTED BY DR ALEXANDER F. CHAMBERLAIN

[NOTE.—Authors, especially those whose articles appear in journals and other periodicals not entirely devoted to anthropology, will greatly aid this department of the *American Anthropologist* by sending directly to Dr A. F. Chamberlain, Worcester, Massachusetts, U. S. A., reprints or copies of such studies as they may desire to have noticed in these pages.—EDITOR.]

GENERAL

Abstammung (Die) der ältesten Haustiere.

(Globus, Brnshwg., 1902, LXXXII, 363-366.) Résumés, with 3 figures, the data concerning the origin of the oldest domestic animals contained in Dr Conrad Keller's *Die Abstammung der ältesten Haustiere* (Zürich, 1902.) Keller considers that the relation of man and the domestic animals is not slavery but symbiosis. The domestication of animals is a selection-experiment that has been going on for millenniums. A horse-taming scene (668 B. C.) depicted on an Assyrian monument deserves particular notice. The antiquity of domestic cattle is another interesting fact.

Azoulay (L.) Liste des phonogrammes composant le musée phonographique de la Société d'Anthropologie. (Bull. Soc. d'Anthr. de Paris, 1902, v^e s., III, 652-666.) The Phonographic Museum of the Paris Anthropological Society now possesses records of conversation, prose and verse, folk-songs, etc., as follows: Annamite 18, Arab 25, Araucanian 3, Armenian 4, Avar 6, Bambara 1, Basque 9, Berber 7, Breton 16, Chinese 76, Church Slavonic 1, Croatian 10, Czech 1, Dahomian 6, English 1, Finnish 5, French 8, Fula 1, Georgian 8, German 2, Gujerati 5, Hebrew 4, Hindustani (Urdu) 9, Hungarian 8, Icelandic 6, Italian 2, Japanese 15, Laotian 11, Lithuanian 5, Little Russian (Ruthenian) 8, Makua 6, Malagasy 35, Malay 2, Mandingo 8, Nengone 3, Norwegian 5, Persian 15, Portuguese 2, Provençal 3, Serere 5, Siamese 2, Singhalese 8, Spanish 2, Swaheli 10, Swedish 1, Tamul 5, Toucouleur 2, Turkish 15, Wolof 6, Yoruba 4.

Andree (R.) Franz Boas. (Globus, Brnshwg., 1902, LXXXII, 306-307.) Sketch of life and scientific activities, with portrait and list of chief works.

Baelz (E.) Noch einmal die blauen "Mongolen-Flecke." (Int. Cbl. f. Anthr., Stettin, 1902, VII, 329-331.) The author holds that the "blue spots" occur in all races except the white, and "are therefore a very important racial criterion." They seem to be found in American Indian children, and among the Brazilian Portuguese are called *tem genipapo* = "he has colored blood" — literally, "blue spots," so called from their resemblance to the color of the genipapo fruit.

Baudoin (M.) Un nouveau genre de tétatopage, les hypogastropages, de type opérable. (Bull. Soc. d' Anthr. de Paris, 1902, v^e s., III, 648-652.) Describes, with figure, a hypogastropagus subject preserved in the museum of the Faculty of Medicine and doubtless the same treated by Depaul 45 years ago.

Chamberlain (A. F.) The contact of "higher" and "lower" races. (Pedag. Sem., Worcester, Mass., 1902, IX, 507-520.) Treats of the childhood of the race, the victory of the vanquished, the "plague of commerce," *Das Erwige-Weibliche*, the fetish of "education," the higher optimism.

Dieterich (A.) Ueber Wesen und Ziele der Volkskunde. (Hess. Bl. f. Volksk., Leipzig, 1902, I, 169-194.) In this general discussion of the nature and aims of folklore, the author considers the science to deal chiefly with "the thoughts and beliefs, customs and legends of people without culture and below

it." The non-correspondence of German *Volkskunde* and English *folklore* is pointed out.

Easter (S. E.) Jade. (Nat. Geogr. Mag., Washington, 1902, XIV, 9-17.) Discusses, with three small maps, the occurrence of jade in the Old and New Worlds: prehistoric Europe, ancient China and Central Asia, New Zealand, Northwest Pacific coast of America, Mexico, Central and South America. The mineral exists *in situ* near Fraser river in British Columbia, in Chinese Turkestan, and elsewhere. The word *jade* is modern, being "derived from the Spanish *piedra de hijada*, 'stone of the loins,' a reference doubtless to the Aztec superstition that jade was the surest protection against diseases of the loins."

Gedächtniss-Feier für Rudolf Virchow. (Verh. d. Berl. Ges. f. Anthr., 1902, 311-330.) Account of memorial meeting, with portrait. Texts of letters of condolence and addresses by Lissauer and Bartels on Virchow's life and scientific activities.

Fawcett (Cicely D.) and **Lee** (Alice). A second study of the variation and correlation of the human skull, with special reference to the Naqada crania. (Biometrika, Cambridge, Eng., 1902, 1, 408-467.) A detached study of some 400 skulls from the prehistoric graves of Naqada in Upper Egypt (48 measurements and indices). Besides 17 briefer tables and plates, there are appended 8 tables containing all the measurements of all the crania. Among the conclusions reached are: The Naqada race is no nearer to the negro than the historic Egyptian (Theban mummies) or the modern Copt. In the majority of characters the people of Naqada, the Thebans, and the Copts, seem to be one race. In some features the Naqadas resemble the negro, in others the European. The relationship between cranial characters is low.

Haddon (A. C.) The saving of vanishing data. (Pop. Sci. Mo., N. Y., 1902, LXII, 221-229.) A plea for "investigators, not mere collectors." Pages 226-229 refer to anthropology. Dangers of rapid collection and "rushed" information are noted.

Keune (J. B.) Hat man in Alterthum schon geraucht? (Corrbl. d. deutschen Ges. f. Anthr., München, 1902, XXXIII,

25-26.) Discusses, in connection with the finding in 1901 at Dreiheligen, near Beimbach, of a prehistoric clay object resembling a tobacco-pipe, the question whether smoking was known in antiquity. The author concludes that some sort of "smoking" by means of "pipes" long antedated the introduction of tobacco.

Krause (E.) Die Conservierung der vor geschichtlichen Metall-Alterthümer nach der im Königl. Museum für Völkerkunde üblichen Verfahren. (Verh. d. Berl. Ges. f. Anthr., 1902, 427-444.) Describes, with 10 figures, the methods in vogue in the Royal Ethnological Museum for preserving prehistoric objects of iron, silver, copper, and bronze, during the last twenty-five years.

Krause (F.) Schleudervorrichtungen für Wurfaffen. (Intern. Arch. f. Ethnogr., Leiden, 1902, xv, 121-155.) Treats, with 4 plates and 4 distribution-maps, of spear-throwers, slings, straps, etc., in various parts of the world and among diverse peoples. The author concludes that spear-throwers and kindred devices were once more widespread over the globe. They have survived, however, in such individual fashion and in places so remote from each other that a general primitive type can hardly be recognized, though for the old French, the Mexican, and the Eskimo spear-thrower a common origin is not impossible. The literature cited is listed on pages 151-153.

Lang (A.) The origin of totem names and beliefs. (Folk-Lore, Lond., 1902, XIII, 347-397.) Treats of sacred animals in savage society, the word *totem* and its meaning, the totem "cult," savage and modern theories of the origin of totemism (Müller, Spencer, Frazer, Thomas, Wilken, Fletcher, Hill-Tout, Hose and McDougall, Haddon, Lang), connection between groups and totems, "disease of language" (not present), hypothetical early groups before totemism, how the groups got names, illustration from folklore, how the name became known, totemic and other group names — English and North American Indian, etc. Mr Lang declares himself in favor of a "nick-name" theory.

Lasch (R.) Die Ursache und Bedeutung der Erdbeben im Volksglauben und Volksbrauch. (Arch. f. Religiw., Leipzig, 1902, 236-257, 369-383.) Résumés

data concerning the beliefs and customs of primitive peoples concerning earthquakes, their cause and significance. Earthquakes ascribed to activities of demons and spirits; earth-supporters, spirits, giants, animals (turtle, fish, serpent, boar, steer), etc. Earthquakes as omens, and the means of prevention are also discussed. Many of the Old World myths of "world-shaking" creatures are of Hindu origin, even the world-steer of the Arabs had probably this source.

Koch (T.) Guido Boggiani, ein neues Opfer des Gran Chaco. (Globus, Brunschwig, 1902, LXXXII, 358-359.) Brief sketch of life and scientific activities of the Italian ethnologist killed in the latter part of 1902 by the Gran Chaco Indians.

Laach (R.) Die Verbreitung des Kropfes ausserhalb Europas. (Ibid., 155-158, 172-177.) A well-documented study of the occurrence of gottle in parts of the globe outside Europe. It does not occur in continental Australia, is comparatively rare in countries inhabited by the white race, but very common among the Mongolian-Malays; occurs only locally in Africa; affects the Melanesians and Polynesians rarely; is not uncommon among the American Indians; is more common in mountainous regions; affects mixed races and the female sex more.

Le Double (A. F.) Du redressement de la courbure à concavité inférieure et de l'état rectiligne de l'articulation squamopariétale. (Bull. Soc. d'Anthr. de Paris, 1902, v^e s., III, 682-684.) Notes the occurrence of the antero-posterior horizontal line in three adult subjects. Horizontality is not confined, as Hartmann thought, to the gorilla, but occurs in the gorilla, orang, chimpanzee, etc.

— Sillon temporo-pariétal externe. (Ibid., 684-685.) Notes occurrence in chimpanzee, gorilla, negroes, Chinese, Caribs, Aymaras, and a skull of the Robenhaus epoch, and its absence in two Kanaka skulls. It varies about the same in all races.

— A propos d'un cas de communication de la fente sphénoïdale et du trou grand rond de l'alisphénoïde humain. (Ibid., 550-551.) Brief account of the occurrence in the skull of a seventeen-years old girl of a new variation — communication of the sphenoidal cleft and

the alisphenoidal foramen, with indications of like phenomena in the animal series.

— Sur quelques variations des trous optiques. (Ibid., 551-553.) Treats of the comparative anatomy of the optical foramen, its absence, variation in form and dimensions, and position, duplex occurrence, etc.

Lewenz (M. A.) and Whiteley (M. A.) A second study of the variability and correlation of the hand. (Biometrika, Cambridge, Eng., 1902, 1, 345-360.) Based on the data in Pfitzner, the measurement of the bones of some 50 hands. Among the conclusions reached are: Bones of right hand are on the whole larger than those of left. There is no significant difference in absolute or relative variabilities between right and left hand bones. There is a slight preponderance in the correlations of the right hand bones over the left.

Lovett (E.) The modern commercial aspect of an ancient superstition. (Folk-Lore, Lond., 1902, XIII, 340-347.) Treats with one plate of a collection of charms of divers sorts, in which are seen the influence of European manufacturers, etc. Cheap "made-in-Germany" goods are ruining aboriginal design.

Macdonnell (W. R.) On criminal anthropometry and the identification of criminals. (Biometrika, Cambridge, Eng., 1902, 1, 177-227.) In this paper, with 4 curves and 37 tables of anthropometric data, the results of the study of measurements of 3000 male prisoners from various parts of England and Wales in comparison with those of 1000 Cambridge men, are discussed in detail. Height, length, and breadth of head, breadth of face, left middle finger, left cubit and left foot are considered. The criminals appear to be "homogeneous, fairly normal in the distribution of the selected characters," agreeing generally in variability with the other classes and races of mankind, but "markedly different from the educated classes in stature and in size and shape of the head." The high correlation of certain characters prevents their use for identification purposes.

Manouvrier (L.) Considérations sur l'hypermégalie cérébrale et description d'un encéphale de 1935 grammes. (Rev.

- de l'Éc. d'Anthr. de Paris, 1902, XII, 391-413.) Detailed description, with four figures, of a brain of 1935 — the subject was J. Bouny, a notary in a little Girondin village, and brother-in-law of the Reclus. He was megasomatic (stature 1750 mm., and notable chest circumference). This brain is compared with other heavy brains (chiefly of men of genius or great talent). It is an interesting case of megacerebrism and megasomia.
- Les recherches anthropométriques du Dr Paul Godin sur la croissance. (Ibid., 1903, XIII, 25-31.) Résumés very briefly the data in Godin's *Recherches anthropologiques sur la croissance* (Paris, 1903), based on the study of 100 children (military cadets) 13-18 years of age. This work obtained the Broca prize of the Paris Anthropological Society.
- Notice sur Arsène Dumont. (Bull. Soc. d'Anthr. de Paris, 1902, v^e s., III, 591-597.) Sketch of life and scientific activities, with list of publications 1888-1901.
- Mantegazza (P.)** Prime linee di psicologia positiva. (Arch. p. l'Antr., Firenze, 1902, XXXII, 543-582.) This section of Professor Mantegazza's outline of positive psychology treats of pleasure among the races of man, pain, general physiology of feeling, forms and stages of feeling, benevolent emotions (love of animals, hospitality, friendship, etc.).
- Rudolf Virchow. (Ibid., 617-618.) Brief general appreciation.
- Guido Boggiani. (Ibid., 619.) Sketch of scientific labors.
- Pearson (K.)** On the change in expectation of life in man during a period of *circa* 2,000 years. (Biometrika, Cambridge, Eng., 1902, I, 261-264.) From comparison of recorded age at death of Egyptian mummies and modern Englishmen, the author concludes that a man of 25 lives on an average 15 years more than a man of 25 years did 2,000 years ago.
- Peet (S. D.)** The distribution of mounds. (Am. Antiq., Chicago, 1903, XXV, 77-92.) General discussion, with 6 figures, of mounds in Europe, Asia, and America, with special reference to the "Mound-builders."
- Pelletier (M.)** Contribution à l'étude de la phylogénèse du maxillaire inférieur. (Bull. Soc. d'Anthr. de Paris, 1902, v^e s., III, 537-545.) From the study of 50 lower maxillaries of Europeans, Negroes, and New Caledonians, the author concludes that the alveolar portion is more stable than the skeletal; this is due probably to its more passive character. The dental and the alveolar portions develop according to laws peculiar to each. Tables of measurements are given.
- Powell (John Wesley.)** (Globus, Brunschwig, 1902, LXXXII, 259-260.) Brief sketch of life with portrait.
- Reed (C. A. L.)** Rudolf Virchow. An appreciation. (N. Y. Med. J., 1903, LXXVII, 265-273.) Treats of education, travels, researches, political activities, Virchow as man and teacher.
- Reinecke (P.)** Neolithische Streitfragen. Ein Beitrag zur Methodik der Prähistorie. (Z. f. Ethnol., Berlin, 1902, XXXIV, 223-272.) Treats of Lake-dwelling pottery, the chronology of the neolithic period, "Bandkeramik" and "Schnurkeramik," and their distribution; the opinions of Götze and Koehl are discussed at length, etc. The author claims that many remains of an apparently neolithic character belong really to the early bronze period.
- Strauch (C.)** Die neue biologische Blutserum-Reaktion, insbesondere bei anthropoiden Affen und bei Menschen. (Verh. d. Berl. Ges. f. Anthr., 1902, 467-471.) Notes on recent experiments with blood-serum, from which has been gained an additional proof of the closeness to man of the anthropoids.
- Strauch (F.)** Einige Stücke aus meinen Sammlungen. (Ibid., 191-194.) Brief notes on a fragment of a tile from the famous "porcelain tower" destroyed in the Taiping rebellion, a Korean oil-pot (ornamented), an old clay lamp from Brindisi, a porcelain "amulet" from Peking, a bamboo "dice-shaker," bamboo hand-rests (used in writing by Chinese), a bamboo tongs, a bamboo stretcher, gum with insects imbedded in it, clay toys from Peking, coconut vessels, photographs of the Chinese astronomical instruments, nose ornament from the Admiralty islands, a bird-sling from the Marshall islands, etc.

Sutherland (J. C.) The engineering mind. (Pop. Sci. Mo., N. Y., 1902, LXII, 254-256.) Brief discussion of "the more or less distinctly pronounced 'note' of modern culture"—the capacity for the recognition of the universal in the particular, or the reign of law in nature—"the engineering mind in the larger sense," what Huxley called "the architectural and engineering part of the business."

Taté (M.) Moyen de fixation des objets de collection. (Bull. Soc. d'Anthr. de Paris, 1902, 7^e s., III, 548-550.) Describes briefly, with figure, a new device for attaching specimens to cards, boards, etc.

Thomson (A.) Cranial form in man, together with some remarks on the attitude of the profession toward anthropology. (Med. Rec., N. Y., 1903, LXIII, 681-687.) Discusses, with 9 figures, intra- and extra-cranial influences upon the form of the skull. Dr Thomson assumes that "man is descended from a pronounced dolichocephalic type with a cranial capacity lower than that of any existing race." Author agrees with Boas on anatomical inexpressiveness of cephalic index. The shape of civilized man's head has been evolved from lower forms.

Tupper (F.) The comparative study of riddles. (Mod. Lang. Notes, Baltimore, 1903, XVIII, 1-8.) Treats, with numerous bibliographical references, the riddle in general, the folk-riddle, the literary riddle (and mixed varieties), the motives of riddles, common origin, transmission, identity of mental process. The relation of riddles to folk-custom, etc., is an important point.

Usener (H.) Ueber vergleichende Sitten- und Rechtsgeschichte. (Hess. Bl. f. Volksk., Leipzig, 1902, I, 195-235.) A plea for the comparative study of moral regulations, codes of life, institutions, etc., by which the life of the individual, the family, the community, and the people, is governed. The historical science of morals and law is one. The subject is illustrated by references to classical antiquity in particular. Appended is an account of the "amecht," an old custom of Luxemburg.

Virchow. (Globus, Brnshwg., 1902, LXXXII, 165-168.) Sketch of life and activities, with figure of Virchow medal.

The name Virchow is said to be Slavonic, meaning "hill man."

Weinberg (R.) Zur Technik des Taster-Cirkels. (Verh. d. Berl. Ges. f. Anthr., 1902, 493-496.) Describes, with 2 figures, a new measuring-part for the compass-calipers used in anthropometry.

EUROPE

Adachi (B.) Geruch der Europäer. (Globus, Brnshwg., 1903, LXXXIII, 14-15.) The smell of Europeans (women especially) is very noticeable to the Japanese—able-bodied adults smell most. The smell is local, chiefly in the armpits (Japanese armpits are odorless even when dirty), and resists soap and water. A Japanese who smells is exempt from military service and finds it difficult to marry. The smell of the Chinese, Adachi thinks, is due to dirt rather than to body odor.

Addy (S. O.) Butterfly charm. (Folk-Lore, Lond., 1902, XIII, 432.) Text and music of the "fly away home" verse, from the neighborhood of Sheffield, England.

Allio (J.) Prahistorische wohnplätze am Weissen meer. (Anz. f. Finn.-Ugr. Forsch., Helsingfors, 1892, II, 69-71.) Brief account, after Gorodcev, of the discoveries of "stations" of the stone age on the White Sea, made in 1892-1896.

Angiolella (G.) Psicopatie e fattore etnico del carattere. (Riv. mens. di Psich. for., Napoli, 1902, V, 167-172.) From his experience as an asylum physician at Nocera for ten years, the author indicates briefly the ethnic characteristics which distinguish the patients from the provinces of Avellino, Bari, Campobasso, Cosenza, Foggia, and Salerno, from all of which regions the Nocera Asylum receives subjects.

Baudoin (M.) et Lacouloumère (G.) Les mégalithes des dunes comme repères de chronologie préhistorique. Menhir de la forêt d'Olonne, Vendée. (Bull. Soc. d'Anthr. de Paris, 1902, 7^e s., III, 613-614.) Author holds that the Olonne megalith of mica schist was brought to its site and erected before the formation of the dunes of the forest of Olonne. It is therefore prehistoric, since these dunes did not exist in the Gallo-Roman epoch.

Buss (E.) *Der Alpsegen im Entlebuch.* (Arch. Suisses des Trad. Pop., Zürich, 1902, vi, 294-298.) Gives text and music of the "Alpcall," which is rapidly disappearing from Switzerland. A bibliography is appended. The milch-funnel, known as *Volle*, is used to shout through.

Capitan (L.) & **Breuil** (H.) *Gravures paléolithiques sur les parois de la grotte des Combarelles.* (Bull. Soc. d'Anthr. de Paris, 1902, v^e s., III, 527-535.) Describes briefly, with 7 figures, the paleolithic drawings of the Combarelles grotto near Eyzies, Dordogne.

Cartailhac (É.) *Cubitus percé d'une flèche en silex.* (Ibid., 611-613.) Brief account of a human cubitus pierced by a flint arrowhead, found in the sepulchral grotto near Caunes in Aude.

De Blasio (A.) *Nuove ricerche intorno al tatuaggio psichico dei delinquenti napoletani.* (Riv. mens. di Psich. for., Napoli, 1902, v, 1-11.) Description, with 4 figures, of "psychic tattooing" on four Neapolitan criminals — brief biographies are given. In many cases tattooing is nothing more than a partial biography of the subject. The "revenge tattooing" might serve to prevent the crime intended, if noted by the authorities.

— *Gli zingari di Napoli.* (Ibid., 85-101, 134-147, 173-189.) An ethnographical and anthropological sketch, with 16 figures (facial types and skulls), of the Gypsies of Naples — the author is acquainted with 111 (24 women, 87 men), in the city and its environs. Name, childhood, marriage, death, mourning, religious beliefs, language, numerals, fortune-telling, sexual life and prostitution (Gypsy prostitutes are not found in European bagnios), family life, chiefs (*bab*), origin and history, etc., are briefly treated. Craniometric data and a bibliography are also given. The author concludes that the Neapolitan Gypsies are ethnically complex, consisting probably of an Indo-Aryan, a Mongolian, and an Egyptian element. They came from Egypt to Italy not prior to 1559.

Ethnographische und anthropologische Arbeiten in Portugal. (Globus, Brn-schw., 1902, LXXXII, 284-289.) Ré-

sumés, with 24 figures, articles by Severo and Cardoso on "The Cemetery of Ferreiro," and on "The Neolithic Skeletons of the Cavern of Alqueves"; by Santos Rocha on "The Copper Age of Figueira"; by de Carvalho, Thomas, and Pires on "Amulets"; by Coelho on "Agricultural Implements"; by Peixoto on "Prado Pottery"; and by Natividade on "The Caves of Alcobaca" — all appearing in *Portugalia*, 1900-1901. See *American Anthropologist*, 1902, N. S., IV, 321, 328.

Forschung (Zur) über alte Schiffstypen auf den Binnengewässern und an den Küsten Deutschlands und der angrenzenden Länder. (Corrbl. d. deutschen Ges. f. Anthr., München, 1902, XXXIII, 36-42.) Treats, with 20 figures, of old types of vessels in various parts of Switzerland. H. Messikommer gives an account of the dugout floetilla of Ober-Aegeri on the lake of Aegeri (canton of Zug), and the fishing-fleet of Wachwyl, Lake Zug. Professor Wavre describes the boats of Lake Neuenberg, etc., and Professor Gross those of the Bielersee. The use of dugouts is interesting since they appear to have been employed continuously since the time of the lake dwellers.

Götze (A.) *Eine neue steinzeitliche Station in Serbien.* (Globus, Brn-schw., 1903, LXXXIII, 37-41.) Résumés, with 15 figures, the article of Vassits on the neolithic "station" of Jablanica.

Hansen (R.) *Die Insel Nordstrand um 1600.* (Ibid., 1902, LXXXII, 31-32.) Résumés the account (recently published by the Schleswig-Holstein Historical Society) of Nordstrand given by Pastor Petersen (Petreus) in 1600. The inhabitants were famous as eaters and drinkers (five meals in harvest-time per day). Primitive superstitions survived along with the new religion. Names were largely patronymics (not inherited).

Heierli (Hr.) *Aus der Urgeschichte des Uetliberges bei Zürich.* (Ibid., 231-236.) Describes, with 16 figures, the archeological remains (a *refugium* of the iron age, graves, etc.; implements and ornaments of the bronze age; a stone axe) on Mt Uetli or Uto near Zürich. Roman tiles and coins were also found, and Lindemann has sought

to connect Mt Uetli with the battle between the Romans and Helvetians in 69 A. D.

Heikel (A. O.) Der fund von Gljadenov. (Anz. d. Finn.-ugr. Forsch., Helsingfors, 1902, II, 58-69.) Résumés, with 2 plates (30 figures), Spicyn's account in Russian of the ancient sacrificial place of Gljadenov in the Government of Perm, discovered in 1896-1897, and the rich finds of arrowheads (400 bone, 300 iron, etc.), chisel-like objects of iron (some 350), miniature objects in large numbers (hammers, axes, arrowheads, knives, etc.), objects of mythological import and animal and human figures (over 1000), ornaments (thousands of beads), pottery (some 150 vessels), animal bones, etc. This place of sacrifice dates probably from 300-600 A. D., and the people represented were perhaps of Permian-Ugrian stock.

Hildebrand (H.) Tränne gamle apsis-kyrkor. (Kngl. Vitt. Ak. Mndsbl., Stockholm, 1897 [1902], xxvi, 1-9.) Brief account, with 8 figures, of the old Upsala church and St Peter's at Sigtuna.

— Svenska kyrkors funtar. (Ibid., 10-13.) Brief description, with 4 figures, of Nos. 19-22 of fonts in Swedish churches. See also pages 109-110.

— Svenska grafstenar. (Ibid., 88-101.) Brief description, with 18 figures, of Nos. 7-21 of Swedish gravestones from Vestergötland.

— Målningar i gotländska kyrkor. (Ibid., 105-108.) Describes, with 4 figures, paintings in the Hemse church in Gotland.

Hörmann (Hr.) Die Schellenbogen der Herdentiere und ähnliche Holzgeräte. (Globus, Brnschw., 1903, LXXXIII, 7-11.) Describes, with 13 figures, the "bell-bows," or bell-supporters, used on cattle in the mountain-country of the Frankish Jura, etc., their ornamentation and analogues. Switzerland and the Tirol offer two different types. An interesting metamorphosis of the St Andrew's cross into a tulip occurs in the ornamentation of some of these bell-bows. The author has just completed a monograph on the subject.

Hoernes (M.) Die macedonischen Tumuli. (Ibid., 1902, LXXXII, 243.) Brief résumé of the article of Traeger.

Jaeger (J.) Oberstauen im Algäu. (Ibid. 143-145.) Notes on the geology, topography, archeology, and place-names of the Oberstauen region near the Bodensee, now a favorite summer resort.

Kassner (C.) Klapperbretter und anderes aus Bulgarien. (Globus, Brnschw., 1902, LXXXII, 315-319.) Describes, with 21 figures, some Bulgarian "call boards" or "clappers" still in use in monasteries. Also folk-architecture, boat-building, crab-boxes, etc. An umbrella-sign and a carrier for coffee-cups are noticed besides.

Klaatsch (H.) Occipitalia und Temporalia der Schädel von Spy verglichen mit denen von Krapina. (Verh. d. Berl. Ges. f. Anthr., 1902, 392-409.) In this special study, with one plate and 10 figures, Professor Klaatsch examines in detail the occipital, temporal and tympanic bones of the Spy and Krapina crania. In a number of points striking parallels exist. He holds also that the Neanderthal type, *e. g.*, is by no means the ancestral representative of all modern races, but in some respects a specialized form. The femur of modern man goes back to a "pre-neanderthaloid" condition.

Korsischen (Die) Totenurnen und die iberische Bevölkerung Korsikas. (Globus, Brnschw., 1903, LXXXIII, 16.) Résumés, with a figure, the section of the article of Bloch relating to funeral urns.

Krause (E.) Ueber die Herstellung vorgeschichtlicher Thongefässe. (Verh. d. Berl. Ges. f. Anthr., 1902, 409-427.) Résumés, with 6 figures, the recent treatise of Edelmann containing Lehle's experiments on the process of making prehistoric pottery, and discusses the ideas therein set forth. Among the matters treated are pottery-making without a wheel, pottery-making by "hammering" a clay-lump, the intermixture of powdered granite, etc. Lehle seeks to show that the prehistoric potter made his wares on forms, without admixture of sand or powdered granite.

— Bernstein-Schmuckstücken aus Kurganen. (Ibid., 344-345.) Brief account, with figure, of thirty-three amber ornaments (amulets?) from kurgans in the government of Novgorod, Russia.

— Ueber den Schädel von Leibniz. (Ibid., 471-482.) Gives, with one

plate, the results of the author's examination of the skull of Leibniz, July 9, 1902, on the occasion of the exhumation of his remains. Discrepancies between the facts found and the data in Eckhardt's biography are pointed out. The asymmetric, scoliotic skull has a capacity of 1422 ccm. (= 1257 gr. brain-weight) and a number of minor pathological characteristics appear, both in the skull and in the other bones.

Krohn (K.) Die märchen und sagenpublikationen von M. J. Eisen. (Anz. d. Finn-Ugr. Forsch., 1902, II, 71-77.) Gives an account of the popular publications of Eisen, the Estonian folklorist.

Laville (A.) Coquilles tertiaires éocènes roulées dans le gravier pléistocène de Cergy, Seine-et-Oise. (Bull. Soc. d'Anthr. de Paris, 1902, v^e s., III, 555-559.) Expresses absolute disagreement with the statement of M. Rutot concerning the state of preservation of the shells of Cergy.

— Hache polie en silex se rapprochant de certains silex de Pressigny de la base des limons jaunes *f* de la vallée de la Seine. (Ibid., 535-536.) Note on a hatchet of polished stone from the stratified layers of the Seine valley resembling the flints of Pressigny.

Leu (H.) Der Tod und die Beerdigungsgebräuche bei den polnischen Juden. (Mitt. d. anthr. Ges. in Wien, 1902, XXXII, 400-408.) Treats of Jewish idea of death, ante-mortem beliefs and customs, preparation of the corpse and burial, funeral customs, mourning, etc. These customs and beliefs indicate the profound impression death has made upon this people, with their death-angel, etc.

Lömborg (L.) Finnmarkerna i mellersta Skandinavien. (Ymer, Stockholm, 1902, XXII, 361-408, 464-505.) Continued and concluded. General ethnographical description, with 2 maps and 24 test-figures, of the Finnish districts of central Scandinavia. Houses and domestic industries, agriculture, boats, etc., are treated of. On page 403 is figured a boat with an outlier. Pages 490-495 deal with anthropological types (3 figures), Karelian, Sarolaxian, and Tavastland.

Lorenzen (A.) Ein nordisches Sonnenbild aus dem Bronzealter. (Globus,

Brnschw., 1903, LXXXIII, 15-16.) Brief description, after Müller, of a bronze sun-disc of the older bronze age (ca. 1000 B. C.) found at Trundholm, northwest Seeland. The disc is gilded on one side.

Manouvrier (L.) Notes sur un cas de T sincipital incomplet et sur une autre lésion énigmatique du crâne. (Bull. Soc. d'Anthr. de Paris, 1902, v^e s., III, 601-604.) Author concludes that the imperfect sincipital T and another lesion on crania from the Menouville dolmen indicate that the neolithic people of this region used cauterization, etc.

Mehlis (A.) Das Hessheimer Urnenfeld. (Int. Cbl. f. Anthr., Stettin, 1902, VII, 257-259.) Brief account of the "urn-field" of Hessheim, discovered in May, 1901 — the most northern find of this sort of the older Hallstatt period in the Rhine valley, probably in South Germany. It represents the transition to the iron age. Form and technique of one Hessheim urn "indicate a direct connection with the ossuarium of Bologna," — imitation of a bronze vessel in clay. Other proofs of Italian influence occur.

Meier (S.) Volkstümliches aus dem Frei- und Kelleramt. (Arch. Suisses des Trad. Pop., Zürich, 1902, VI, 241-256.) This fourth section deals with death and burial — treatment of the dying, services, funeral, masses, etc.

de Mortillet (A.) L'argent aux temps préhistoriques en Europe. (Rev. de l'Éc. d'Anthr. de Paris, 1903, XIII, 1-24.) In this article, with 17 figures, the author concludes that silver has been known and used in Europe since the beginning of the bronze age, but its general employment dates only from the beginnings of the iron age, its spread coinciding with the appearance of lead. Up to the Roman period it is principally in regions where silver occurs *in situ* that objects of that metal occur in numbers.

v. Negelein (J.) Aberglauben auf der Kurischen Nehrung. (Globus, Brnschw., 1902, LXXXI, 236-239, 289-292.) Folklore of the Nehrung region on the Kurisches Haff in East Prussia: Demons (forest and sea), the devil, mermaids, house-spirits, superstitions about life, birth, marriage, death, nightmare, ghosts, etc. A projected road through

the Nehrung with the resulting influx of outsiders will doubtless soon change the aspect of things now so interesting to the folklorist.

Nichols (May L.) The origin of the red-figured technique in Attic vases. (Amer. J. of Archeol., Norwood, Mass., 1902, VI, 327-337.) In this article, with two plates, the author thinks that the suddenly-appearing (6th century B. C.) red-figured technique was of multiple Greek origin.

Pellandini (V.) Indovinelli ticinesi. (Arch. Suisses des Trad. Pop., Zürich, 1902, VI, 303.) Texts and answers of six riddles from the Ticino.

Pittard (E.) Contribution à l'étude anthropologique des grecs d'Europe, Dobrudja. (Rev. de l'Éc. d'Anthr. de Paris, 1902, XII, 414-424.) Résumés the measurements of some 50 Greeks of the Dobrudja,—stature, head, face, nose, color of hair and eyes. The stature of the Dobrudja Greeks is about that of the Greeks proper. There are two head types, subdolichocephalic and subbrachycephalic, the latter predominating. Certain differences between these Greeks and the Albanians are noted.

Qvigstad (J.) Einige nordische lehnwörter im lappischen. (Finn.-Ugr. Forsch., Helsingfors, 1902, II, 137-140.) Discusses 25 Norse loan-words in the Lapp dialects.

Ratzel (F.) Neue megalithische Denkmäler auf Korsika. (Globus, Brnschw., 1902, LXXXII, 162.) Note on Tomasi's recent discovery of dolmens and erect stones in southwestern Corsica, along with other remains of the late stone age (obsidian implements are common). The Corsican shepherds use these stone objects as amulets.

Reinecke (P.) Zur Chronologie der zweiten Hälfte des Bronzealters in Süd- und Norddeutschland. (Corr.-Bl. d. deutschen Ges. f. Anthr., 1902, XXXIII, 17-22, 27-32.) Treats, with 8 text-figures, and a chronological table of the distribution of the most important finds of the bronze age in Central Europe, of the chronology of the second half of the bronze age in southern and northern Germany.

Richardson (R. B.) An ancient fountain in the Agora at Corinth. (Amer. J. of

Archeol., Norwood, Mass., 1902, VI, 306-320.) Detailed account, with 4 plates and 5 text-figures, of the fountain discovered in 1900, a briefer description of which was noticed in the *American Anthropologist*, 1901, N. S., III, 563.

Rossat (A.) Chants patois jurassiens. (Arch. Suisses des Trad. Pop., Zürich, 1902, VI, 257-280.) Phonetic text in dialect and literary French version, with music, of Nos. 137-140 of satiric songs and variants from the Jura country.

Salmon (L.) Folk-lore in the Kennet valley. (Folk-Lore, Lond., 1902, XIII, 418-429.) Retribution-stories, folk-medicine, riddles, animal tales, divination, death and luck signs, witch-stories, "laying spells," ghosts.

Schuppli (H.) Kinderlieder. (Arch. Suisses des Trad. Pop., Zürich, 1902, VI, 281-295.) Text of 100 children's songs chiefly from the Basel country. Nos. 1-17 used by adults to children, 18-52 by children among themselves, 53-58 by children in reference to nature, etc., 59-65 merry tales, etc., 66-76 teasing rhymes, etc., 77-90 letter-songs, quick-talkings, etc., 91-92 riddles, 93-99 prayers, feast songs, beggar rhymes, 100 counting-out rhyme.

Setälä (E. N.) Zur etymologie von Sampo. (Finn.-Ugr. Forsch., Helsingfors, 1902, II, 141-164.) Thoroughgoing discussion of the dozen or more proposed derivations of the name of the talismanic jewel forged by Ilmarinen in the Finnish epic. No definite conclusion is reached.

Stolpe (H.) Österhvarpfyndet. (Kngl. Vitt. Ak., Stockholm, 1897 [1902], xxvi, 82-88.) Brief account, with 13 figures, of the find of the older iron age at Österhvarf, Östergötland.

Urslaventum zwischen Elbe und Rhein? (Globus, Brnschw., 1902, LXXXII, 239-242.) A review by K. Rhamm of E. Boguslawski's *Erforschung der vorhistorischen Zeit in der Vergangenheit der Slaven* (Berlin, 1902): sociology, archeology, ethnography, linguistics; discussion by Jellinghaus of Slavonic words in German dialects, and by R. Andree of *Wend* and like names. The general result is very unfavorable to the book.

Vigstrom (Eva). Geister- und Gespensterbergglaube aus Västra Göttinge und Skåne, Schweden. (Ibid., 1903, LXXXIII, 43-45.) Items of folklore relating to what is put in the coffin with the dead, appearances of ghosts, bargains with ghosts, buried treasures, death-warnings, etc.

Wateff (S.) Anthropologische Beobachtungen der Farbe der Augen, der Haare und der Haut bei den bulgarischen Schulkindern in der europäischen Türkei. (Corrbl. d. deutschen Ges. f. Anthr., München, 1902, XXXIII, 23-24.) Gives results of observation of 26,681 children between six and ten years of age and 1,842 between ten and twenty—a total of 28,523 almost entirely from the country districts of European Turkey. The preponderating characters are brown eyes 58.82 percent, brown hair 45.89 percent, white skin 64.95 percent. To the blond type belong 11.77 percent, brunette, 41.96 percent, mixed 46.27 percent.

Weber (F.) Vorgeschichtliche Ueberreste aus Baiern in ausserbairischen Sammlungen. (Ibid., 52-54, 65-67.) Lists, according to place of origin, all prehistoric objects from the various parts of Bavaria, preserved in the Museum für Völkerkunde in Berlin.

Williams (Mary G.) Studies in the lives of Roman empresses. I. Iulia Domna. (Amer. J. Archeol., Norwood, Mass., 1902, vi, 259-305.) Deals chiefly with inscriptions, etc. Julia Domna, wife of Septimius Severus, seems to have surpassed all her predecessors in public honors. Of more than 180 inscriptions the majority have some public significance. The coins struck in her honor exhibit more than 350 varieties. She was occasionally identified with divinities.

Wilser (L.) Gehört Dänmark mit zur Urheimat der Arier? (Sitzgb. d. anthr. Ges. in Wien, 1902, 51-53.) The author argues for the region of Schonen in Sweden, the ancient Scania, as the primitive home of the Teutons and other Aryans—the *officina gentium*—from which birth-land old Aryan culture spread over the neighboring lands and islands.

— Vorgeschichtliche Wandmalereien aus der Grotte von Altamira bei Santander in Spanien. (Globus, Brnschw.,

1902, LXXXII, 161-162.) Brief résumé, with figure, of Cartailhac's account. See *American Anthropologist*, 1903, N. S., v, 142.

— Hafva folkinvandringar ägt rum i Skandinavien? (Ymer, Stockholm, 1902, XXII, 505-514.) Discusses the question of successive immigrations into Scandinavia. See *American Anthropologist*, 1903, N. S., v, 140.

Winter (A. C.) Lettische Totenklagen. (Globus, Brnschw., 1902, LXXXII, 367-372.) After describing the funeral customs of the Letts in general the author gives, with explanatory notes, the German text of a funeral song of 50 four-line stanzas from the Wissendorff-Bielenstein-Aron collection of Lett folk-songs.

Z. (Dr) Neue Erscheinungen in der Entwicklung der jüdischen Bevölkerung im Deutschen Reiche. (Ibid., 1903, LXXXIII, 65.) Résumés facts in Ruppin's article on "Die Sozialen Verhältnisse der Juden in Preussen und in Deutschland" in the Hildebrand-Conrad *Jahrbücher für Nationalökonomie und Statistik*, vol. XXIII. The latest statistics indicate for the Jews in Germany decrease in percent of population, in birth-rate, in number of marriages. Increase appears in death-rate and urbanization. The rate of still-born children is still less with Jews than with Christians.

AFRICA

Azoulay (L.) Manuel des dialectes malgaches et soahély. (Bull. Soc. d'Anthr. de Paris, 1902, v^e s., III, 611.) Brief appreciation of Jully's recent work, which contains vocabularies of the Malagasy dialects and of Soaheli, the *lingua franca* of eastern Africa—a composite from various African tongues, Arab, Hindu languages, etc.

Berthelot (M.) Discovery of platinum among the ancient Egyptian metals. (Am. Antiq., Chicago, 1903, xxv, 114-116.) From the French original in the *Compte Rendu de l'Académie des Sciences*.

Blanckenhorn (M.) Die Geschichte des Nil-Stroms in der Tertiär und Quartärperiode, sowie des paläolithischen Menschen in Ägypten. (Z. d. Ges. f. Erdk. zu Berlin, 1902, 694-722, 753-762.) In this article, with 2 plates (maps, etc.), the author concludes that the oldest man in Egypt dwelt on the plateaus

and not in the Nile valley itself, and that, by the end of the third great glacial extension, when northern Europe became habitable for mankind, "the inhabitants of Egypt could already look back over a civilization several millenniums old." The beginning of pottery dates back to the later diluvial period, the appearance of prehistoric man to the middle diluvial.

De l'Harpes Reise durch das Aurèsgebirge und die Sufoasen. (Globus, Brnschw., 1902, LXXXII, 349-354.) Résumé, with 7 figures, after the account in the *Tour du Monde* for 1901. Brief notes on food of the Berbers, a festival of the natives of the Menah oasis and the people of Suf are included.

Förster (B.) Das Völkergemisch an der Ostseite des Viktoria-Nyansa. (Ibid., 374-375.) Brief account, based on C. W. Hobley's *Eastern Uganda* (London, 1902), of the mixture of peoples now taking place on the eastern shore of the Victoria Nyanza.

Gentz (G.) Sänge der Hereros in Deutsch-Südwestafrika. (Ibid., 1903, LXXXIII, 80-81.) German renderings (prose) of three songs of the Herero, with brief general description of poetic art among this primitive people.

Götttschling (E.) "Ndalama" in Bawendalande, Nordtransvaal. (Ibid., 1902, LXXXII, 243.) Brief note on the *ndalama* or stone money of the Bawenda of German East Africa, with figure.

Hölzernes Kopf (Ein) aus Benin? (Int. Arch. f. Ethnogr., Leiden, 1902, xv, 207.) Brief note, with 3 figures, on a wooden head in the Imperial Ethnographic Museum, supposedly from Benin.

Huguet (J.) Les juifs du Mzab. (Bull. Soc. d'Anthr. de Paris, 1902, v^e s., III, 559-573.) Treats of the location of the Jews of Mzab, in southern Algeria: physical characters, domestic life, marriage and divorce (563-568), death and burial, festivals, etc. Circumcision is postponed till the third year. The Jews of Mzab are "in a state of moral and material degeneration." They number some 900.

— Sur les Touareg. (Ibid., 615-642.) Treats, with map and 12 figures, of origin and migration, language, relations with French, political organ-

ization, physical characters, clothing and ornament, weapons, domestic life, etc. The Tuareg are monogamous and woman has a higher position than among the Arabs. The name *Tuareg* is said to signify "abandoned" in reference to a certain legend. The southern Tuareg do not use the *tifinar*.

Keller (J.) Astronomische Ansichten der Isubu in Kamerun. (Z. f. afrik., ozean. u. ostas. Sprachen, Berlin, 1902, vi, 167-173.) These negroes look upon Venus as the morning-star and have much moon-lore. They seem to recognize but two cardinal points, east (or toward the interior) and west (seaward).

Martin (F. R.) Föremål af kappar och brons från Egypten och Cypern samlade år 1896. (Kngl. Vitt. Ak., Stockholm, 1897 [1902], III-143.) Lists, with 160 figures, bronze and copper objects (axes, celts, daggers, chisels, etc.) from ancient Egypt and Cyprus, obtained in 1895-6, now in the State Historical Museum.

Regalia (E.) "Il protettorato dell'Uganda e i Pygmei. (Arch. p. l'Antr., Firenze, 1902, XXXII, 611-616.) Résumés the data concerning the pygmies in Johnston's *The Uganda Protectorate* (London, 1902) and discusses the general subject.

Schweinfurth (G.) Kiesel-Artefacte in der diluvialen Schotter-Terrasse und auf den Plateau-Höhen von Theben. (Verh. d. Berl. Ges. f. Anthr., 1902, 293-308.) After a general introduction, the author describes, with 3 plates containing 24 figures, flint scrapers, etc., from the diluvial boulder-terraces of Thebes, now in the Museum für Völkerkunde, Berlin. Schweinfurth notes, on the one hand, "the paleolithic internationalism" of Egypt, and, on the other, its "neolithic singularity."

Staudinger (P.) Ueber einige afrikanische Gegenstände. (Ibid., 247-248.) Brief notes on photographs of the house of the king of Ashanti and his throne-procession, some copper and bronze objects from Ashanti, tin-sticks from the Benué country (the natives melt and work tin), beliefs about spirits and the after-life of the Ga or Akra people adjoining Togoland (the fetish-town is in the sea), etc.

— Einiges über Millefiori-Glas. (Ibid., 248-252.) The author, who has studied

the origin of old African beads, thinks the so-called *agri* is not a real millefiori product.

Stoll (O.) Zur Frage der Benin-Altertümer. (Int. Arch. f. Ethnogr., Leiden, 1902, xv, 161-166.) Cites from early writers, particularly João de Barros, evidence of culture relations of the Benin peoples with higher civilizations. The question of the location of the kingdom of Ogané is discussed. The problem of the Benin antiquities is yet to be solved.

Träger (P.) Die "weisse Negerin" Amanua und ihre angebliche Schwester. (Verh. d. Berl. Ges. f. Anthr., 1902, 492-493.) Brief note, with 2 figures, on the "white negress" Amanua, said to be from Accra—a normal negro of some 25 years of age, with the exception of her pale white skin.

ASIA

Anthony (R.) Silex taillés provenant de l'île de Yéso. (Bull. Soc. d'Anthr. de Paris, 1902, v^e s., III, 548.) Note on fourteen flints from Hakodate, attributed to the pre-Aino race of Japan.

Azoulay (L.) Les livres israélites illustrés. (Ibid., 643-644.) Note on two Hebrew books printed at Leghorn and Vienna, relating to the Passover and containing numerous engravings dating from the Middle Ages—a violation or neglect of the second commandment.

Blösch (A.) De la race qui précéda les Sémites en Chaldée et en Susiane. (Ibid., 666-682.) Résumés data as to pre-Semitic inhabitants of Chaldea and Susiana. Author concludes that these were a *black* race, neither negro nor negrito, originating from the south.

Burchardt (H.) Reiseskizzen aus dem Yemen. (Z. d. Ges. f. Erdk. zu Berlin, 1902, 593-610.) This travel-sketch, with map and 11 figures, contains notes on the city of Sanaa and its people.

Capitan (L.) Étude sur l'exposition de la délégation en Perse, sous la direction de M. de Morgan. (Bull. Soc. d'Anthr. de Paris, 1902, v^e s., III, 604-608.) Gives, with 6 figures, an account of the Morgan collection from Susa in the Champs Elysées. See also page 609.

Casanowicz (I. M.) The collection of Oriental antiquities at the U. S. National

Museum. (Journ. Amer. Orient. Soc., 1902, XXIII, 44-47.) Brief notes on Assyro-Babylonian and Egyptian monuments, relics, etc., historical specimens, ceremonial objects of six religions (but particularly modern Jewish), Judaism, Mohammedanism, Græco-Roman, Brahmanism, Buddhism, Shintoism. There are also a Korean sorcerer's outfit and a set of amulets.

Excavations of the ruins of Babylon. (Rec. of Past, Washington, 1903, II, 1-15.) Résumés, with 2 figures, the report of the Koldewey expedition of the German Oriental Society.

Garnault (P.) Sur le sens de la circoncision des lèvres dans la bible. (Bull. Soc. d'Anthr. de Paris, 1902, v^e s., III, 536.) Discusses the meaning of the Biblical term "uncircumcised lips." These words have a mystic sense and, contrary to Dr Chervin, have nothing to do with stammering.

Huxley (H. M.) Syrian songs, proverbs, and stories; collected, translated and annotated. (J. Amer. Orient. Soc., 1902, 175-288.) This valuable paper, the result of the author's labors in the summer of 1900 in the Beirût country, contains vernacular text in Arabic characters, transliteration in Roman, and English rendering of wedding songs (1-24), funeral songs (25-47), proverbs (48-96), and stories (97-116). A few explanatory notes are appended and pages 178-189 are occupied by a bibliography of "all books and articles of importance to the student of modern Arabic." Mr Huxley has made a decided contribution to the literature of the Arabic vernacular.

ten Kate (H.) Anthropologisches und Verwandtes aus Japan. (Int. Cbl. f. Anthr., Stettin, 1902, VII, 259-265, 321-329.) Treats of Baelz's theories on Japanese race-elements (to his chief types and middle-type ten Kate would add two others, both "American Indian" in many characteristics), *métis* (these are more Caucasoid than Japanese); giants, dwarfs, cripples, albinos (all rare); the "Japanese knee" (retroversion constant); crooked legs (due to sitting); platycnemia (rare); tibio-femoral index; vital lung-capacity (not notably great); sense of smell (anosmia due to absence of separation of smell and breath channels).

- v. Luschan (F.)** Ueber einige Ergebnisse der fünften Expedition nach Sendschirli. (Verh. d. Berl. Ges. f. Anthr., 1902, 379-388.) Describes the investigation in 1894-1902 of the hill of Sendschirli in the marshy plain of the Kara-Su in northern Syria, and the ruins connected with it. Among the new finds is a peculiar statue of a god (like the Hadad statue now in Berlin), dating from the ninth century, B. C.
- Magnus (F.)** Ein Besuch am Hofe von Korea. (Globus, Brnswgw., 1902, LXXXII, 158-161.) Describes, with pictures of king and crown-prince, a visit to the Korean court at Seoul.
- Müller (F. W. K.)** Reise nach Ost-Asien. (Verh. d. Berl. Ges. f. Anthr., 1902, 252-253.) Gives facsimiles, with translations, of Chinese official letters in Chinese and Manchu.
- Nicole (P.)** Le dieu Jahvé. (Bull. Soc. d'Anthr. de Paris, 1902, v^e s., III, 573-581.) Résumés data as to the character of the Hebrew Jahve and his worship. Author considers him to represent "a fusion of totems of different primitive tribes." His ascendancy was largely due to the prophets.
- Paasonen (H.)** Ueber die türkischen Lehnwörter im Ostjakischen. (Finn.-Ugr. Forsch., Helsingfors, 1902, II, 81-138.) Comparative study of 144 loan-words from Turkish in the Ostiak language and its dialects, with introduction on phonology. A considerable number of these are "culture terms"—hunting and fishing, domestic animals, trade and industry, household arrangements and appurtenances, food and clothing, terms of relationship, political and social ideas, art, mythology and religion.
- Rösler (E.)** Ueber archäologische Forschungen und Ausgrabungen in Transkaukasien, unternommen für die kaiserlich russische Archäologische Commission im Jahre 1900. (Verh. d. Berl. Ges. f. Anthr., 1902, 137-191, 221-245.) Treats, with 264 text-figures, of the archeological investigations of the Russian Royal Commission in 1900 in Transcaucasia. The Helenendorf graves, Nos. 30-52, and their contents are described; also the excavations of Metschetli, Mt Kasna-Tapa, the prehistoric graves of the Kara and Maly Pargét kurgans in the Saruschád district, the excavations at the fortress of Alexandropol, the rock-inscriptions at Kanlidschá, etc.
- Stevens (H. V.)** Die Schöpfungssage der Orang Têmia auf der Halbinsel Malaka. (Globus, Brnswgw., 1903, LXXXIII, 47-49.) Detailed account of creation-myth—translated from author's M.S. by H. W. Williams. Naing the earth-burrowing and Sam-mor the above-ground spirit through their contentions are the cause of things as they now are. The seven first human beings were made by Sam-mor from leaves and were therefore mortal. The ancestors of the Têmia are, however, a man and a woman made otherwise—the mother had three sons and three daughters at the first birth.
- Namengebung und Heirat bei den Örang Têmia auf der Halbinsel Malaka. (Ibid., 253-257.) Detailed account of name-giving and marriage among one of the forest tribes of the Malay peninsula, edited by H. Stönnner after the author's death. The Têmia man has two names. The medicine-men have charge of the ceremonies. There are seven classes of shamans. The head-band of tree-bark is important for the bride.
- Toldt (K.)** Ueber einen Hadhrami- und einen Sokotri-Mann. (Sitzgb. d. anthr. Ges. in Wien, 1902, 55-56.) Descriptions of an Arab from Hadhramût and a Sokotran who were exhibited to the society July 1, 1902, by Dr Toldt on his return from travel. The one is pronouncedly Semitic in type, the other has a marked negroid intermixture. The arms of the Sokotran are very long. The cephalic index of the Hadhrami is 81.52.
- de Ujfalvy (C.)** Iconographie et anthropologie irano-indienne. (L'Anthropologie, Paris, 1902, XIII, 713-734.) In this concluding section the author résumés the investigations and opinions of Dalton, Risley, Crooke, Nesfield, etc., on the physical type of the modern Hindus. The ethnic history of India differs from that of Iran, the former being as propitious to dolichocephaly as the latter has been to brachycephaly. The pure Aryan type had already disappeared before the contact of India with the occident. Early India had a white, yellow, and dark population, all more or less mixed.

Wake (C. S.) The peopling of Asia and America compared. (*Am. Antiq.*, Chicago, 1903, XXV, 101-107.) Geographical conditions, population, and art resemblances of southeastern Asia and Central America are briefly discussed. Favors Asiatic influence.

Wilson (L.) Französische Ausgrabungen in Susa. (*Globus*, Brnschw., 1902, LXXXII, 295.) Résumés Delisle's article.

INDONESIA, AUSTRALASIA, POLYNESIA

Archambault (M.) Nouvelles recherches sur les mégalithes néocalédoniens. (*L'Anthropologie*, Paris, 1902, XIII, 689-712.) Describes, with 19 figures, the sculptured and hieroglyphic stones of Bourail, Houailon-Poro, Koua-Méré (group of the "Hundred Stones"), Canala, Dothio, Thio-Kouenthio, etc., in New Caledonia. The author believes that these petroglyphs antedate the present negroid inhabitants. Comparisons with inscribed stones in Peru, Brittany, and Celtic Britain are suggested. The number of such monuments in New Caledonia is surprisingly large and many more remain to be discovered.

Buelow (W.) Das Fischereirecht der Eingeborenen von Deutsch-Samoa. (*Globus*, Brnschw., 1902, LXXXII, 319-320.) Discusses briefly the fishery-laws of the Samoan natives. The lagoon is the fishing ground to which these regulations refer. All beyond the reef, "to the ends of the world," is free. These laws are very old and have remained in force until the present day.

Chamberlain (A. F.) Philippine studies, VII. Place-names derived from plant-names. (*Am. Antiq.*, Chicago, 1903, XXV, 108-111.) Lists, with etymologies, forty-five place-names, in various parts of the Philippines, derived from names of trees, plants, and fruits.

Dempwolf (Dr) Medicinische Anschauungen der Tami-Insulaner. (*Verh. d. Berl. Ges. f. Anthr.*, 1902, 333-336.) Treats of anatomical terms, healing methods (magic and conjuration chiefly), and sex-life. *Katen*, "internal organs," appears in many names of diseases and emotional states. For "free love" and "adultery" there are special terms, *kangdamo*, *kangdiwi*, signifying "pleasure man," "pleasure woman." Feder-

asty occurs only in children's games and Lesbianism in the obscene puberty dances of maidens. Forms of the coitus are noted. In matters of "magic" healing, whites are not conjurable since they "drink too much and cool off their souls."

Diels (L.) Reisen in West-Australien. (*Z. d. Ges. f. Erdk. zu Berlin*, 1902, 797-813.) This sketch of travel in 1901 contains (pages 812-813) some notes on the aborigines. The author remarks that a Spanish mission has been the most successful with them. The half-civilized make a better impression on the observer than the "wild" Australians.

Erdweg (M. J.) Die Bewohner der Insel Tumléo, Berlinhafen, Deutsch-Neu-Guinea. (*Mitt. d. anthr. Ges. in Wien*, 1902, XXXII, 274-310, 317-399.) This valuable monograph by a missionary, with 126 figures, treats of: Topography; physical characteristics of natives; wooing and marriage; birth and education; disease medicine, "magic" healing (text of several formulæ); death and its ceremonials (etiquette table is given); religious ideas (the female *parak* spirits are not friendly to women); festivals; dances (texts of five dance songs); clothing and ornament; weapons; fishing and its implements; agriculture; food and its preparation (sago-charms); house utensils, implements, etc.; pottery (woman makers, men sellers); houses and house-building; boats and boat-building; art; social organization — village, district, family; property relations (small child has private property); name-giving (list of boys', girls', and adults' names); time-reckoning and astronomy; statistics in detail (census of 1900 gave 294 natives, of whom 153 were male).

Garnier (J.) Vocabulaire des indigènes de l'Australie occidentale. (*Bull. Soc. Neuchat. de Géogr.*, Neuchatel, 1902-3, XIV, 247-251.) Lists of some 140 words in the dialects of Hope Bay and Coolgardie in West Australia.

Graebner (F.) Holztrommeln des Ramu-distriktes auf Neu-Guinea. (*Globus*, Brnschw., 1902, LXXXII, 299-305.) Describes, with 18 figures and a distribution map for Melanesia, the wooden drums of Ramu in New Guinea, their ornamentation, etc. The Ramu drums appear to have been borrowed from Taii, in the Admiralty group, different types

representing different Taiu styles, with some local modifications.

- v. **Hoevell** (G. W. W. C.) Werphotu (boomerang)? op Zuid-Celebes. (Int. Arch. f. Ethnogr., Leiden, 1902, xv, 201-202.) Brief note, with figure, on what appear to be boomerangs from Pangkadjene in southern Celebes.

Howitt (Mary E. B.) Some native legends from Central Australia. (Folk-Lore, Lond., 1902, xiii, 403-417.) English texts of eight legends, with notes, from the collection of the Rev. O. Seibert, now being prepared for publication. Among the things accounted for by these legends are, killing by "pointing the bone," moon-spots, why there are no lizards where the *kulva* grows, origin of cane-grass.

Huguenin (P.) Raiatea la sacrée. (Bull. Neuchat. de Géogr., Neuchatel, 1902-3, xiv, 5-246.) This monograph, with 34 plates, many of them colored, several maps, and 63 figures, treats of all aspects of Tahiti and the Tahitians: Geography, topography, natural history, population (origin, race, physiological, pathological, sociological characters, psychic life), the family, death and funeral rites, ideas of future life, social life (domestic and international), history, the Tahitian language, tales and legends, folk-songs, etc. The author is ex-director of the Raiatea schools. The figures of the census of 1897 show that the population of Tahiti and Moorea is on the increase, being considerably more than in 1848. The "fire-walk" is discussed on pages 141-155 with the words of the "sorcerer" Tupua in Tahitian. The section on language occupies pages 207-226, and the native text of Psalm XXIII and several Polynesian versions of the Lord's Prayer are recorded. The texts of several legends and songs (with music) are also given.

Javanischer Prinz von Djokjakarta. (Globus, Brnschw., 1902, 327, 329.) Portrait after v. Pedersen of a Javanese prince, with note of explanation.

Kohlbrugge (J. H. F.) und **Jasper** (Hr.) Grisee auf Java, ein Centrum einheimischer Industrie. (Int. Archiv. f. Ethnogr., Leiden, 1902, xv, 203-207.) Extracts, with two plates, from recent accounts by these authors of the native industries of Grisee in the district of

Surabaja, Java—copper and brass utensils, implements, etc., rattan-mats, etc.

Mathews (R. H.) The aboriginal languages of Victoria. (J. & Proc. R. S. of N. S. W., Sydney, 1902, xxxvi, 71-106.) Brief grammatical sketches of the Tyattalla of Lakes Werringen and Albacuttya with the Tyäpwurru and Wuddyäwurru dialects; the Thäguwurru of the Goulburn, Campaspe, and Ovens river country, with the Woiwurru dialect; the Brabirrawulung of Eastern Victoria from Tarwin river to Cape Howe and northward back to the Alps. Pages 96-106 are occupied by vocabularies of 325 words in Tyattalla and Brabirrawulung, taken down by the author in the camps of the natives. Mr Mathews points out that some of the stories recorded by R. B. Smyth, in his *Aborigines of Victoria*, are in "a mere ungrammatical jargon."

— Languages of some native tribes of Queensland, New South Wales and Victoria. (Ibid., 159-190.) Grammatical sketches of nine aboriginal languages, Yualea and Pikumbil of Queensland; Kawambarai, Wongaibon, Kurnu, Tyake (Mystic language), and Dyirringan of N. S. Wales; Yotayota and Bureba of Victoria. This mass of new material is further evidence of the zeal and accomplishments of the author. A most valuable item is the list of words in the Tyake or "secret language used only by the men at the initiation ceremonies." Vocabularies of Kurnu (200 words) and of Yualeai and Yota-yota (365 words) are appended.

— The Thoorga language. (Proc. & Tr. R. Geogr. Soc. Austral., Queensl., 1901, xvii, 49-73.) Besides a grammatical sketch of Thoorga and a vocabulary (67-73) this paper contains also (63-67) an account of the Yookumbill language. On pages 61-63 are given text and music of several songs used during the initiation ceremonies—"the first songs of the aborigines of this part of N. S. Wales set to music."

Mayet (L.) Une brochette de machoires humaines. (Bull. Soc. d'Anthr. de Paris, 1902, v^e s., iii, 600.) Brief description, with figure, of a string of human jaw bones from the Fly river, New Guinea. Evidence of cannibalism.

Sarasin (P. u. F.) Weitere Reisen in Célebes. (Globus, Brnschw., 1903,

- LXXXIII, 45-47.) Extracts from letters describing trip from Palu to Paloppo. Notes on the Kulawi of Turaja stock, the To-Psada, etc. Head-hunting and a sort of "reduced" cannibalism prevail in Leboni, Lindu, etc.
- Sierith** (O.) Samoanische Märchen. (Int. Arch. f. Ethnogr., Leiden, 1902, xv, 167-200.) Nos. VI-XV of Samoan tales, native and German versions, with some explanatory notes. Among the things attempted to be explained are the new way of counting, origin of fish-hooks, why owls eat mice.
- Smiley** (C. W.) The Tahiti fire-walk. (Mind, N. Y., 1903, xi, 338-345.) Discusses Professor Langley's account of Papa-Ita's performances, with the opinion that his fire-safe feet acquired that quality "by practice in concentrating the mind." A number of "fire-miracles" from religious literature are cited.
- Weule** (K.) Zwergvölker in New Guinea? (Globus, Brnschw., 1902, LXXXII, 247-253.) Discusses, with 3 figures (natives of the country on the middle Ramu), the question of the occurrence of dwarf-peoples in New Guinea, and their relation to the small Indonesian races. The author considers their existence proved and inclines to the theory that a negrito population once extended over all the Indonesian-Papuan area.
- Zondervan** (H.) Die Erweiterung unserer Kenntnisse von Niederländisch Neu-Guinea. (Ibid., 1903, LXXXIII, 11-14.) Sketch of exploration-progress in Dutch New Guinea. Contains some notes on the aborigines — Tugere tribes, Arfu of the hinterland of little Geelvink bay. "Tugere" is said, like "Papua," to be a nickname.
- AMERICA
- Blake** (W. W.) The National Museum of Mexico. (Rec. of Past, Washington, 1902, II, 16-26.) Brief notes, with 7 figures, on the Aztec calendar stone, the statue from Teotihuacan, the statue of Coatlicue, the sacrificial stone of Tizoc, the statue of Kinich-Kakmo, the colossal head of Yopico Calmecac, the Palemké cross, terracotta, metal and lapidary specimens, the stone tiger, musical instruments, Indian paintings, etc.
- Boas** (F.) Die Eskimo des Baffinlandes und der Hudson-bai. (Globus, Brnschw., 1902, LXXXII, 263-270.) Résumés, with 25 figures, the data in Dr F. Boas' monograph in *Bull. Amer. Mus. Nat. Hist.*, 1901, xv, pt. 1.
- Brown** (C. E.) The stone spud. (Am. Antiq., Chicago, 1903, xxv, 93-101.) Reprinted from *The Wisconsin Archeologist*. Noticed in *American Anthropologist*, 1903, N. S., v, 165.
- Chamberlain** (A. F.) Algonkian words in American English. (J. Amer. Folk-Lore, Boston, 1902, xv, 240-267.) Lists alphabetically (with etymological and historical discussions) 132 words of Algonkian origin now or formerly in use in American English. Some of these, like *caribou*, *caucus*, *moose*, *mugwump*, *Tammany*, *opossum*, *raccoon*, *wigwam*, *moccasin*, *skunk*, *squash*, *squaw*, *toboggan*, *tomahawk*, *woodchuck*, etc., are well known; others less so. Some, like *totem* and *manito*, belong to the vocabulary of science. Many are names of animals, plants, etc.
- Dorsey** (G. A.) Wichita tales. I. Origin. (Ibid., 215-239.) Detailed English version of the origin-legend of the Wichita of Oklahoma, obtained in April, 1902. Treats of creation of men and women, ball-play, origin of day and night, deluge-legend, restoration of earth, Wichita and Pawnee, Apaches and Osages, migrations, settlement, dance and vision, etc.
- Fishberg** (M.) The Jews as immigrants — from a medical standpoint. (N. Y. Med. J., 1903, LXXVII, 594-596.) Protests against the arraignment of the Jewish immigrants as diseased and physically inferior.
- Koch** (T.) Die Apiaká-Indianer, Rio Tapajos, Mato-Grosso. (Verh. d. Berl. Ges. f. Anthr., 1902, 350-579.) Historical sketch and ethnographic notes (350-359) with 6 figures of types, and vocabulary (parts of body, objects of nature, individual, family, etc., ethnographic objects, plants, animals, numerals, 1-10, 20, adjectives, pronouns, adverbs, verbs and phrases). The Apiaká present "a remarkable mixture of culture and primitiveness." A large number of the Apiaká retreated to the Rio São Manoel to escape the whites.
- Lehmann-Nitsche** (R.) Noch einiges zu den verstümmelten peruanischen Thonfiguren und ein Amputationstumpf an

einem Gefässe aus Alt-Peru. (Ibid., 341-343.) In this article, with 2 figures, the author concludes that the pre-Columbian clay-figure discussed represents an amputation of the right leg (a beggar). The vase is in the Mérou collection.

— Weitere Angaben über die altpatagonischen Schädel aus dem Museum zu La Plata. (Ibid., 343-350.) After introductory remarks, some notes on funeral and burial customs of the Moluche, Taluhet, and Dinihet Indians, and a discussion of the etymology of Tehuelche, the author concludes that the skulls in question, which come from the Rio Negro, belong to one of the Puelche tribes.

Lejeal (L.) L'archéologie américaine et les études américaines en France. (Rev. Int. de l'Enseignm., Paris, 1903, XLV, 215-233.) Introductory lecture on Loubat foundation. Résumés French studies of ancient American cultures. Notes the former existence of a "greater Peru."

Lyman (W. D.) The painted rocks of Lake Chelan. (Proc. Amer. Ant. Soc., Worcester, 1902-3, XV, 259-261.) Brief accounts of pictographs, in red pigment, of men, tents, deer, and wild goats, on the granite walls of Lake Chelan in the Cascade mountains, in central Washington. The author thinks that they were made "by some race prior to the Indians and prior to the change of the level in the lake." Some of them have been destroyed through being used as targets by white men.

Maler (T.) Yukatekische Forschungen. (Globus, Brnschw., 1902, LXXXII, 197-230.) This study, dedicated to the International Congress of Americanists and illustrated with 22 figures, treats of the ruins and other archeological remains of Chacbolai, Chácmultun, Ichpich, Xcalúmkin, Malerxlabpak, Xcavil de Yáxché, Yáxché-Xlabpak, Xculoc, Chúnhuhub, Almuchil, Xkálupócoch, Itsimté, Tintah, Yakal-Chúc, Xlabpak de Santa Rosa, Dsehkabtun, Dsibiltún.

McLaughlin (A. J.) The American's distrust of the immigrant. (Pop. Sci. Mo., N. Y., 1902, LXII, 230-236.) Statistical and general study. Opposition to immigrants at birth of Constitution, in 1812, in 1830, in the early fifties (Know-nothing movement), reaction and lessening of anti-foreign feeling,

re-birth of late-years of distrust, are noted. Suggested remedies are discussed. Physically the Syrian immigrant appears to be the worst off, the Slav the best. The German, the Irishman, and the Scandinavian, who make good citizens, are no longer feared.

Mochi (A.) I popoli della Uaupé le a famiglia etnica Miranhã. (Arch. p. l'Antr., Firenze, 1902, XXXII, 437-541.) This first part of a valuable monograph, with small map (after Colini) and 23 figures, treats of the peoples of the river Uaupé of southern Colombia (Arawak, Miranhã, Carib, and mixed stocks) and of the Miranhã tribes in particular. Names and geographical distribution, somatic characters, mutilations, ornaments and clothing, settlements (neither strictly sedentary nor nomadic), houses and house-life, utensils and implements, hunting and fishing, food and its preparation (mandioca, etc.), stone axes and other instruments (lithic industry is on the decline), trade and commerce, hospitality, war and weapons (bow and arrow, spear, shield, etc.), slavery. The Miranhã stock of Mochi is partly the same as the Betoya of Brinton.

Nordenskiöld (E.) Resa in granstrakterna mellan Bolivia och Argentina. (Ymer, Stockholm, 1902, XXII, 437-464.) This account of travels in the Bolivia-Argentina frontier regions, with 17 figures, contains notes on the Puna and Chiriguano Indians, the Chorotes, Pachamama altars, the cave-drawings of Quatchichocana, etc. The cave-pictures are reproduced on page 451 and on page 458 is an Indian drawing a bow.

— Ueber präcolumbische Salzgewinnung in Puna de Jujuy. (Verh. d. Berl. Ges. f. Anthr., 1902, 337-341.) Describes, with 7 figures and a table of dimensions, twenty-five stone axes, which from their form, weight, and way of occurrence, seem to have been used for breaking up salt. Salt is still mined by the Omaguaca Indians of this region. The axes are thought to be pre-Columbian.

Peet (S. D.) The relics of the Mississippi valley. (Ibid., 117-136.) General account with illustrations.

Peterson (C. A.) The Clayton stone axe. (Rec. of Past, Washington, 1901, II, 27-28.) Describes, with figure, a stone

axe found fourteen feet below the surface near Clayton, Mo., in September, 1902. The author thinks its discovery proves that "the native American in this vicinity had reached the neolithic period of culture prior to the deposition of the loess formation in the central Mississippi valley."

Preuss (K. T.) Das Reliefbild einer mexikanischen Todes-Gottheit im Königl. Museum für Völkerkunde zu Berlin. (Verh. d. Berl. Ges. f. Anthr., 1902, 445-467.) Detailed discussion, with 14 figures, of a relief-picture of a god of death belonging to the Uhde collection from the high plateau of Mexico, now in the Museum at Berlin, and the relation of the divinity represented to others in the Aztec pantheon.

de Rialle (G.) De l'âge de la pierre au Chili. (Bull. Soc. d'Anthr. de Paris, 1902, 5^e s., III, 644-648.) Discusses the pierced stones, called in Araucanian *catancura*, and the theories as to their use,—they were probably used, as Darwin suggested, as weights for digging-sticks.

Sapper (K.) Mittelamerikanische Waffen im modernen Gebrauche. (Globus, Brnschw., 1903, LXXXIII, 53-63.) Discusses, with some 50 figures, the bows and arrows and allied weapons still in use among the Indians of Central America and parts of Mexico,—Seri, Yaqui, Lacandon, Lenca, Mosquito, Sumo, Guatuso, Jicaque, Chiripó, Bribri, Paya, etc.,—and compares them with the figures of weapons in the old Mexican Mss. Form, ornament, technique, relation to bow, are considered, and tables of lengths, weights, and location of center of gravity given. Feathering characterizes the north. Great differences exist in the points.

Schmidt (—.) Reiseskizzen aus Matto-Grosso, Brasilien. (Globus, Brnschw., 1902, LXXXII, 347-349.) Brief account of a *rancheria* and its life.

Schott (G.) Beobachtungen und Studien in den Revolutionsgebieten von Domingo, Haiti und Venezuela während einer im Frühjahr 1902 unternommenen Reise. (Ibid., 1903, LXXXIII, 69-71, 85-92.) This travel-sketch, with 9 figures, contains some items of ethnographic interest. The little revolution in Domingo was a comedy, that in Haiti a tragicomedy. More than fifty-five percent of the population of Venezuela is of mixed race.

Sievers (W.) Das Gebiet zwischen dem Ucayali und dem Pachitea-Pichis, Ost-Perú. (Ibid., 73-78.) Résumé of Fr. Sala's *Exploracion de los Rios Pichis, Pachitea y Alto Ucayali y de la Region del Gran Pajonal* (Lima, 1897). Contains some notes on the Kachibo, Konibo, Chipivo, and Kampa Indians. The last paint themselves red. The Chipivo women are more painted than the men. The arrows of the Kachibo are not feathered.

Spitzka (E. A.) Contributions to the encephalic anatomy of the races. *First paper*:—Three Eskimo brains, from Smith sound. (Amer. J. Anat., Baltimore, 1902, II, 25-71.) Detailed account, with 20 figures, of the brains of two adults (man and wife) and a girl of twelve years. The brain weights were, respectively, 1470, 1375 (est.), and 1227 gr.,—the Eskimo brain seems on the average heavier than the European, and to be of a highly developed type. Pages 68-71 contain a bibliography of the surface morphology of the cerebral hemisphere in the various human races.

Thayer (A. E.) A study of the deaths occurring in New York city on the opposite sides of twenty streets during the year 1895. (N. Y. Med. J., 1903, LXXVII, 137-142.) Interesting statistical investigation showing the greater mortality to be expected on the north side of any street.

Vorkolumbische (Das) Portoriko. (Globus, Brnschw., 1902, LXXXII, 292-294, 308-311.) Reproduces in German, with 4 figures, the paper of Dr J. Walter Fewkes.

Willoughby (C. C.) Hats from the Nootka Sound region. (Amer. Nat., Boston, 1903, XXXVII, 65-68.) Brief account, with one plate and two figures, of eight hats of cedar bark and grass spires from the Indians of Nootka sound. They are all of twined weaving and double (an exterior and an interior hat). The design on all but one is the killer whale—the other has a mythical *motif*. The author suggests that the valuable ethnological relics in the possession of old whalers and their families be acquired by or deposited in some museum of standing. These hats, now in the Peabody Museum, are of great value and interest.

ANTHROPOLOGIC MISCELLANEA

A Crow Monument to Shame. — A short distance off both sides of the main road from East Pryor to the sub-agency of the Crow reservation at Pryor, Montana, are three monuments, each composed of boulders of various sizes and arranged in outline on the ground in the form of a human being, as shown in figure 9. The largest of these monuments is

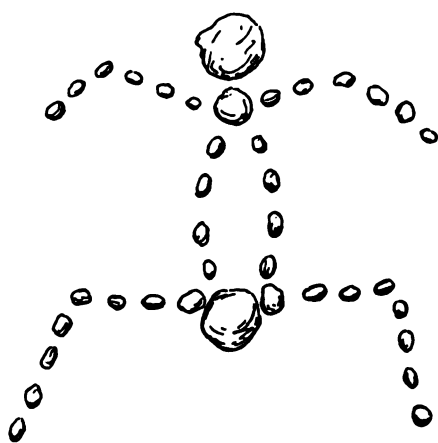


FIG. 9. — Outline monument of the Crows.

near the right side of the road ; it has the appearance of being much the oldest in construction, as the boulders are partly embedded in the earth. To the left of the road, a short distance from the largest monument, are the two others, each about the size of a human figure and apparently of recent construction. Near each of the monuments is a heap of boulders. It was learned that there are similar monuments on the Crow reservation and that each was constructed by men, assisted by

their male friends, to commemorate the infidelity of their respective wives and to perpetuate the shame of the latter. The custom is an ancient one, but none of the Crows seem to know when or how it originated.

When a Crow has positive proof that his wife has been untrue, he usually invites several of his friends to meet him at a designated place, and at an appointed time of the day or night, for the purpose of administering punishment to his wife by each having forcible intimacy with her. To prevent interference on the part of the woman's relations or friends, the invitees are pledged to secrecy, and should any attempt be made on the part of the woman's adherents to rescue her, it is met with overpowering resistance by the husband and his followers.

The guilty wife is usually induced under some pretext to accompany

her husband to the place where his friends are in waiting. When she sees them she naturally realizes what is about to happen and tries to escape, but she is seized, gagged, and forced to submit. When the husband thinks sufficient punishment has been meted out to the woman, she is allowed to go, but not back to her husband's tipi, for he henceforth disowns her.

From one informant I learned that after the woman had gone, the men marked with three stones the spot on which the punishment took place, and that when others saw these stones and understood their meaning, they arranged others to complete the outline of a human figure. From another source it was ascertained that the three stones represented the number of men who had participated in the punishment of the woman, and that each stone in the adjacent heaps of boulders previously spoken of represented a spectator of the affair. The monuments are renewed and kept intact as long as resentment is cherished toward the woman by her husband and his friends, who promptly replace the stones should the wife's friends or relations disturb or throw them away.

Occasionally, when the woman's relations or friends learn of the intention of her husband to inflict punishment, they appease his wounded honor by making him valuable gifts, should they be in a position to do so; but, after receiving punishment of this nature, a woman remains disgraced until she remarries, when the affair is hushed and she is no longer publicly reminded of it.

It is reported that death sometimes results from the ordeal to which an unfaithful Crow wife has been forced to submit, yet notwithstanding the gravity of the offense and the severity of its punishment, immorality prevails among both young and old of the tribe.

S. C. SIMMS.

The Kato Pomo not Pomo.—The Kato Pomo, or Cahto Indians, live in Long and Cahto valleys in Mendocino county, California, on the south fork of Eel river. They were first mentioned by McKee (Senate Ex. Doc. 4, 32d Cong., Special Session, p. 148) in a rather indefinite manner as occupying "the second large valley upon the waters of Eel river." The language is mentioned as differing somewhat from that spoken on Russian river. Stephen Powers, who visited them in 1877, speaks of them as knowing several languages, but gives a vocabulary, purporting to have been collected from them, which is clearly Pomo. Since that time they have been classed with the Pomo.

While working with the Wailaki at Round Valley, California, in October, 1901, I met several Indians from Cahto. I discovered that

they understood and spoke Wailaki. They informed me that their language differed but little from that language. Not long after, Mr S. A. Barrett, a student in the University of California, visited Cahto and collected a vocabulary which he at once recognized as not Pomo. After seeing this vocabulary I visited them in June, 1902, and satisfied myself that they are Athapaskan, differing but little in language from the Wailaki.

P. E. GODDARD.

Dr Fewkes' West Indian Researches.—Dr J. Walter Fewkes has lately returned from the West Indies after a season of successful exploration in the interest of the Bureau of American Ethnology and the National Museum, bringing many prehistoric objects and valuable data in the form of notes, drawings, and photographs. The collection gathered in Porto Rico and Santo Domingo, numbering over a thousand specimens, is one of the largest that has been brought to the United States from the West Indies for many years. This addition to the famous Latimer collection, which experts regard as second to none, makes the present collection of Porto Rican prehistoric objects in the National Museum unrivaled.

Dr Fewkes added many specimens to his collection by purchase, but found others through excavation in caves and in prehistoric cemeteries. In Santo Domingo he purchased the Archbishop's collection, numbering about one hundred and ten specimens and containing many unique objects. Among these are about twenty pestle-shaped stones with handles finely wrought in grotesque animal and human forms. A new and significant type of mammiform image, represented by several specimens of rare workmanship, occurs among the stone idols, and there are also several well-polished mortuary masks and faces. The stone amulets are remarkably fine, but the carved shell and bone images excel all in artistic workmanship. One of the latter is a polished rib of the manati or sea-cow, one end of which is fashioned to represent a kneeling figure, the limbs of which are excellently modeled. This object is probably one of the "sticks" used in prehistoric times to aid vomiting as a preliminary purification in Antillean ceremonies.

Although the early Antillean people were expert potters and adept in relief decoration, none of our museums adequately illustrate West Indian ceramics. Several fine specimens of prehistoric Santo Dominican pottery, of various forms, occur in the newly-acquired collection, including a canteen with decorated lateral extensions resembling mammæ—a type hitherto unknown from the West Indies. Among the stone objects are

three fine hatchets (with blade and handle both of stone); a finely polished ceremonial celt, ornamented in relief on one side with the face and arms of a human figure, and many other significant specimens.

The part of the collection obtained in Porto Rico, numbering over eight hundred specimens, contains many examples of the typical prehistoric objects from the island, some of which differ in significant ways from those hitherto known. There are several good specimens of the problematical stone rings — now very rare — popularly called “horse-collars,” a number of mammiform stone idols of unusual form, varying in size from a marble to a foot in length, and decorated stone masks and stone faces, probably once attached to staves and used in mortuary dances. The peculiar petaloid stone celts vary in form, size, and material, and number several hundred. The Porto Rican collection is particularly rich in fragments of pottery, consisting of simple and decorated handles of bowls, clay images of animals which once formed the relief ornamentation of the same, incised sherds, and ornamented margins of vases, bowls, and platters.

Although the Porto Rican, unlike the Dominican, part of the collection contains no object of a wholly different type from those already known, the value of the component specimens is greatly enhanced by the light thrown on their meaning from information obtained by excavations carried on by Dr Fewkes in different parts of the island. With an insight into aboriginal customs thus obtained, combined with historical research, he will be able to interpret the meaning of well-known objects which has been considered problematical.

In the mountain districts within ten miles of a Porto Rican town called Utuado, Dr Fewkes heard of over twenty artificial structures called by the natives *juegos de bola*, or ball courts. These structures, often known by the more expressive term “Indian corrals,” appear to be the only prehistoric aboriginal attempts at buildings which survive. They consist of rectangular, level enclosures, slightly sunken below the surrounding plain, varying in size from a few hundred feet to as many yards. As the name “corral” would imply, they are surrounded by aligned stone slabs, one or more of which are cut into massive idols or decorated with rude pictographs. Excavations were made in one of these structures near Utuado in order to determine their character, and good evidence was found that one, at least, of their uses was the celebration of those mortuary dances, well known to students of early Spanish writings like those of Oviedo, as *areitos*. Just outside these enclosures Dr Fewkes discovered artificial mounds which excavations revealed to be prehistoric Porto Rican cemeteries, a discovery of prime importance, as localities

where the aborigines deposited their dead had never before been definitely determined. In one of these mortuary mounds he found many skeletons surrounded by mortuary offerings, and brought back to Washington two comparatively good skulls which are believed to be the only prehistoric Porto Rican crania in our museums. Similar osteological material, including several skulls, was likewise found in caves, but these latter places of burial appear to be more modern than the mounds near the dance enclosures.

The floor of a typical cave, the walls of which bore "Carib" pictographs, was also explored for the purpose of obtaining information regarding prehistoric cave occupancy in Porto Rico. While it was developed that the individual cave examined, although prehistoric and occupied for a long time, was resorted to by people of the same culture as those who used the mortuary dance places, this occupancy was of no great antiquity. The culture of the earliest and the latest occupants of this cave was found to be practically identical. Trenches ten feet deep dug across the entrance to the cave, where the debris caused by human presence was most extensive, showed no material difference in the character of the pottery and stone objects found near the original floor of the cave and those on the surface of the debris. Considerable attention was given to the study of Porto Rican pictography, which is abundant in caves and on boulders along the larger rivers.

Dr Fewkes' studies will be treated in special papers, and the general results, including an account of the more striking objects collected, will shortly be published in a preliminary account of the explorations.

A Japanese Fire-walk.—The wife of a prominent American naval officer recently sojourning in Japan, writes to her family the following description of a Japanese fire-walk which was witnessed by her at Tokio in September last. Her interesting narrative of this most interesting rite reminds one of a similar ceremony witnessed by Mr S. P. Langley on the Island of Tahiti, in the summer of 1901, an account of which appears in the *Smithsonian Report* for the year named.

"When we left the T——'s we went to a temple in the Kanda quarter of the city, where there was to be a fire-walking—a Shinto ceremony which is not very ancient, nor originally Japanese, but brought here from India by Shinto priests. We were given seats on a porch or verandah of the temple that looked into a small court. In the midst of the court was a bed of charcoal some six yards long, about two yards wide, and some two feet deep or thick. On top of the coal were a quantity of

straw bags in which coal is carried here ; the straw was as long and wide and much deeper than the charcoal. We waited some time while prayers and chantings went on in the temple and processions of priests in gorgeous robes passed through the corridor behind where we were sitting. Then some attendants went into the court, which was crowded with spectators, roped off at a safe distance from the pile of coal, and swept all around the pyre until the earth looked as clean as a floor — not a Japanese floor, for nothing is so clean as that.

“The attendants were in white cotton garments (with bare arms, legs, chests, and heads), and, baldric-wise, a yellow twisted cotton scarf, looking almost like a rope. They brought a number of bundles of papers, which we were told were prayers, and threw them upon the pyre, then lighted the straw which immediately flamed and roared and crackled and sparked until we were uncomfortably warm where we sat. By this time it was past six o'clock and nearly dark ; the court was lighted by large paper lanterns, the great fire, and a full moon which shown into it.

“Presently the straw burned down and the whole mass of coal was thoroughly ignited ; then the attendants came with long bamboos and beat the fire until no sparks flew, and fanned it with great white fans on long bamboos. Then they swept clean all the ground where ashes or bits of coal had fallen, and fanned the fire till it glowed all through the pile. Then a number of priests came without their splendid robes, dressed in loose trousers to the knee, and a short tunic, leaving arms and chests also bare. The whole costume was of white cotton. They walked around the fire, striking sparks with flint-and-steel, and carrying trays full of salt. Afterward mats were spread at each end of the fire and the salt was poured out on them ; then followed more prayers and more fanning of the fire. An English woman sitting near me said, ‘Ah, of course they will never go into that ; one could not expect it ! Ah, no ; they're timid ; of course they're timid ; naturally they are ; any one would be. You will see that they will not.—Gracious !’ (with a loud scream) ‘he's going in ; he's gone !’ And he certainly had.

“Bare footed, having rubbed his feet a second in the salt, one priest walked calmly down the middle of the fire ; another followed, and another, and another, I do not know how many. One, G—— said, ‘strolled’ through the eighteen feet of red-hot coals with no apparent discomfort, though we were holding up fans to keep the heat from our faces and eyes. We watched them for some time, and then a number of the people, who were looking on, followed the priests,—one a woman with a baby on her back ; several little boys went leaping across, while two modest, refined looking little girls walked calmly through.

"The Shintoists claim that, having been perfectly purified by their prayers and ceremonies, no evil has any power over them. Fire they regard as the very spirit of evil; so twice a year, I believe, they go through this fire-walking as a kind of 'outward and visible sign of inward spiritual grace.' It was very wonderful and interesting, and having seen the whole thing from the beginning, we all came away entirely bewildered."

Monosyllabic Languages. — The so-called "monosyllabic" and tonal languages of eastern Asia, of which Chinese is the most important representative, have been considered by many authorities to exemplify "degeneration" in speech, being the attritional or worn-down forms of a much more highly organized linguistic system. The more reasonable view that this family of languages constitutes rather one of the great primal groups of human speech has been reënforced of recent years. In a paper on the Lolos and other more or less primitive and semicivilized tribes of western China, read at the 1902 meeting of the British Association, A. Henry, from a comparison of the language of the Lolos, Miao-tze, etc., and Chinese, expresses the opinion that the languages in question "form a distinct primal group and are not the result of linguistic degradation." These languages are extremely important from an evolutionary point of view. A. F. C.

Ostiaks. — According to K. F. Karjalainen (*Anz. d. Finn.-Ugr. Forsch.*, 77, 1902) the Ostiaks of Tobolsk, Surgut, Beresov, and Narym numbered in 1890 some 18,000 souls. Far from disappearing, this primitive people has increased about six percent during the last fifty years. There are distinguished seven dialects of Ostiak — Irtysh, Kondinsk, Berezov, Obdorsk, Surgut, Vach, and Upper Ob, the last being spoken by the fewest people, some 1500; the Obdorsk by the most, some 3500.

Native Languages of Victoria. — All the languages of the native tribes of eastern Victoria, although differing widely in vocabulary, are the same in grammatical structure as the Thurrawal tongue described by me in an article to the Royal Society of New South Wales in 1901.¹ The nouns, pronouns, verbs, adverbs, prepositions, etc., can be inflected for number and person, as illustrated in the article cited. There are a singular, a dual, and a plural number, with a double form of the first person of the latter two — one including, and the other excluding, the party spoken to.

¹ "The Thurrawal, Gundungurra and Dharruk Languages," *Journ. Roy. Soc. N. S. Wales*, vol. xxxv, pp. 127-160.

These remarks apply equally to the languages of that portion of Victoria situated to the west of longitude 145°, with the addition of a trial number in all the parts of speech subject to inflection. The trial number, as existing in the native languages of Victoria, is different in character to that observed in some of the South Sea islands. For example, in Aneityum, in the New Hebrides, the terminations of the dual, trial, and plural are independent, and differ from each other in form, as follows: We (dual inclusive), *akaijan*; we (trial inclusive), *akataij*; we (plural inclusive) *akaija*.¹

But among the Victorian tribes the trial number is formed by adding another termination to that of the plural. For example, in the Tyattyalla, Tyäpwurru, and Wuddyäwurra languages, the ending *kullik* is added to the termination of the suffix of the plural; thus: we (plural inclusive), *yurwengurrak*; we (trial inclusive), *yurwengurrakkullik*, and so on. In the Thaguwurru and kindred tongues, the term *baiap* is substituted for *kullik*, but it is employed in precisely the same way.

Indications of a trial number were noticed by the late Mr Francis Tuckfield² in the pronouns of the Woddowro (Wuddyäwurra) tribe, but its general application to the other parts of speech has not hitherto been reported.

For the purpose of illustrating the Victorian trial I will briefly introduce the conjugation of the present tense of the verb *yüngga*, to throw, in the singular, dual, trial, and plural:

Singular	1st Person,	I throw,	<i>Yünggan,</i>
	2d “	Thou throwest,	<i>Yünggar,</i>
	3d “	He throws,	<i>Yüngga.</i>
Dual	1st Person,	{ We (incl.) throw,	<i>Yünggangul,</i>
	2d “	{ We (excl.) throw,	<i>Yünggangulla,</i>
	3d “	{ You throw,	<i>Yünggawul,</i>
Trial	1st Person,	{ They throw,	<i>Yünggabulla.</i>
	2d “	{ We (incl.) throw,	<i>Yünggangukullik,</i>
	3d “	{ We (excl.) throw,	<i>Yünggandakkullik,</i>
Plural	1st Person,	{ You throw,	<i>Yünggawatkullik,</i>
	2d “	{ They throw,	<i>Yüngganatykullik.</i>
	3d “	{ We (incl.) throw,	<i>Yünggangu,</i>
		{ We (excl.) throw,	<i>Yünggandak,</i>
		{ You throw,	<i>Yünggawat,</i>
		{ They throw,	<i>Yüngganaty.</i>

¹ *Report Austr. Assoc. Adv. Science*, vol. IV, p. 714.

² *Ibid.*, vol. VII, pp. 842, 853.

The above table shows that the suffixes of the dual and the plural are distinct, but the term *kullik* is superadded to the termination of the plural to form the trial.

The Tyattyalla numerals are: one, *kaiup*; two, *bulety*. The numerals of the Thaguwurru are: one, *kopthun*; two, *bulabil*.

R. H. MATHEWS.

Australian Ethnology. — In a pamphlet of 37 pages published at Roebourne, Western Australia, 1901, Mr John G. Withnell describes "The Customs and Traditions of the Aboriginal Natives of Northwestern Australia," — particularly those of the Pilbarra district. The object of the author, who has had more than twenty years' experience among the aborigines treated, is a laudable one, for "since the discovery of gold and the consequent influx of population, the natives cannot carry out their traditions as they used to do: most of the young men, being in the employment of the whites, prefer to imitate them, caring little or nothing for their elders' teachings. So it is merely a matter of time when they will become extinct." The topics treated are their belief, "tarlow" (cairns for the increase of animals), infancy, personal adornment, marriage laws, the procuring of food, amusements (under which is included "rock carvings"), battle, and death. After a youth has been circumcized he is "not allowed to eat emu or turkey until he has been speared or the elders, considering him a man, invite him to eat with them. Young damsels are also prohibited from eating emu and turkey until they attain the age of twenty-one or become mothers." Copies of the pamphlet may be obtained from the author, price one shilling.

Angrand Prize. — The French *Journal officiel* of April 5, according to *L'Anthropologie* for March-April, announces that the prize for American history and archeology, founded at the Bibliothèque National at Paris by M. Léon Angrand, has been awarded for the second time by an international jury. This quinquennial prize of 5000 francs has this year been granted Dr René Verneau, assistant in anthropology in the Museum of Natural History at Paris, for his work *Les Anciens Patagons*, published through the generosity of Prince Albert of Monaco. The volume is regarded as an excellent exposition of the collections accumulated at the Museum of Natural History and at the Trocadero during recent years. Dr Carl Lumholtz was given honorable mention in recognition of his researches among the tribes of the Sierra Madre of Mexico, notably the Huicholes and the Tarahumares.

The Philippine Government, by act of November 11, 1902, authorized the Exposition Board for the Louisiana Purchase Exposition to establish in the city of Manila a permanent museum for the Philippines. The Exposition Board has also taken measures to organize a permanent Academy of Sciences. Information can be furnished by Gustavo Neiderlein, 384 Calle Gral. Solano, San Miguel, City of Manila.

Copper Age. — In a pamphlet, *L'âge de cuivre* (Louvain, 1902, 35 pages), reprinted from the *Revue des Questions Scientifiques* for July, 1902, the Marquis de Nadaillac sums up the evidence in favor of the existence of an "age" of copper anterior to that of bronze. The "copper age" is most clearly marked in the New World, and pages 19-35 are taken up with American data. Among the opponents of the idea of a "copper age" are Evans, Lubbock, Boyd-Dawkins, Mortillet, et al. The author thinks that, in most parts of the globe and among most peoples, copper as a useful metal came before bronze. It may have been also the first metal so employed. Nadaillac notes that the view that gold was the first metal to be used by man, set forth for about the first time by Fournet in his *L'influence du mineur sur le progrès de la civilisation*, published in 1861, has been recently advocated by M. Reinach.

A. F. C.

Modern Neanderthaloid. — At the meeting of the Berlin Anthropological Society on July 19, 1902, Herr Dr v. Hansemann exhibited photographs and an X-ray picture of a Hungarian (23 years of age), whose skull "exhibits a certain likeness to the Neanderthal and Spy crania and to that of the Pithecanthropus" (*Verh.*, p. 293). These resemblances lie in the marked development of the supraorbital ridges and the frontal sinuses, the flat of the head, and protuberance close behind bregma. A fuller account is promised later of these Neanderthaloidisms.

A. F. C.

Painted Rune-stones. — The theory that many of the Scandinavian rune-stones were originally painted receives confirmation from the discovery, in the summer of 1900, beneath the floor of the church at Gadre (island of Gotland), of seven rune-stones, three of which still contained traces of red coloring matter.

A. F. C.

Aboriginal Copper. — Mr Clarence B. Moore, 1321 Locust street, Philadelphia, Pa., has prepared a reply to Mr Joseph D. McGuire's closing remarks in the Copper symposium in the last issue of the *American Anthropologist* and will be glad to send it free to any one interested in the subject.

PROF. C. V. HARTMAN, whose work on the antiquities of Costa Rica was recently published by the Royal Geographical Society of Sweden, and who several months ago accepted service in the Carnegie Museum as a curator of archeology and ethnology, is at present in Costa Rica in the interest of the museum, says *Science*. The Carnegie Museum has obtained by purchase from Señor Don Pedro Maria Velasco the extensive collection of Costa Rica antiquities at present on deposit in the Museum of Archeology of the University of Pennsylvania. Dr W. J. Holland, the director of the Carnegie Museum, announces that it is not his intention, however, to remove the collection from the temporary custodianship of the museum in Philadelphia until a later date.

THE SOCIÉTÉ D'ANTHROPOLOGIE of Paris has recently lost by death two of its most distinguished members. Dr Victor Laborde, who died April 6th, aged 72 years, was editor of *La Tribune Médicale*; in 1890 he inaugurated a course in anthropologic biology in the School of Biology, and in the following year was elected president of the Société d'Anthropologie. Élie Massénat, who died March 16th, aged 72 years, as a result of exposure while conducting excavations at Eyzies, had been an enthusiastic student of cave deposits since 1863, when he began excavations in the grotto at Puy de Lacan, later exploring those of Pouzet at Terrasson (Dordogne), at Laugerie-Haute, Laugerie-Basse, and elsewhere.

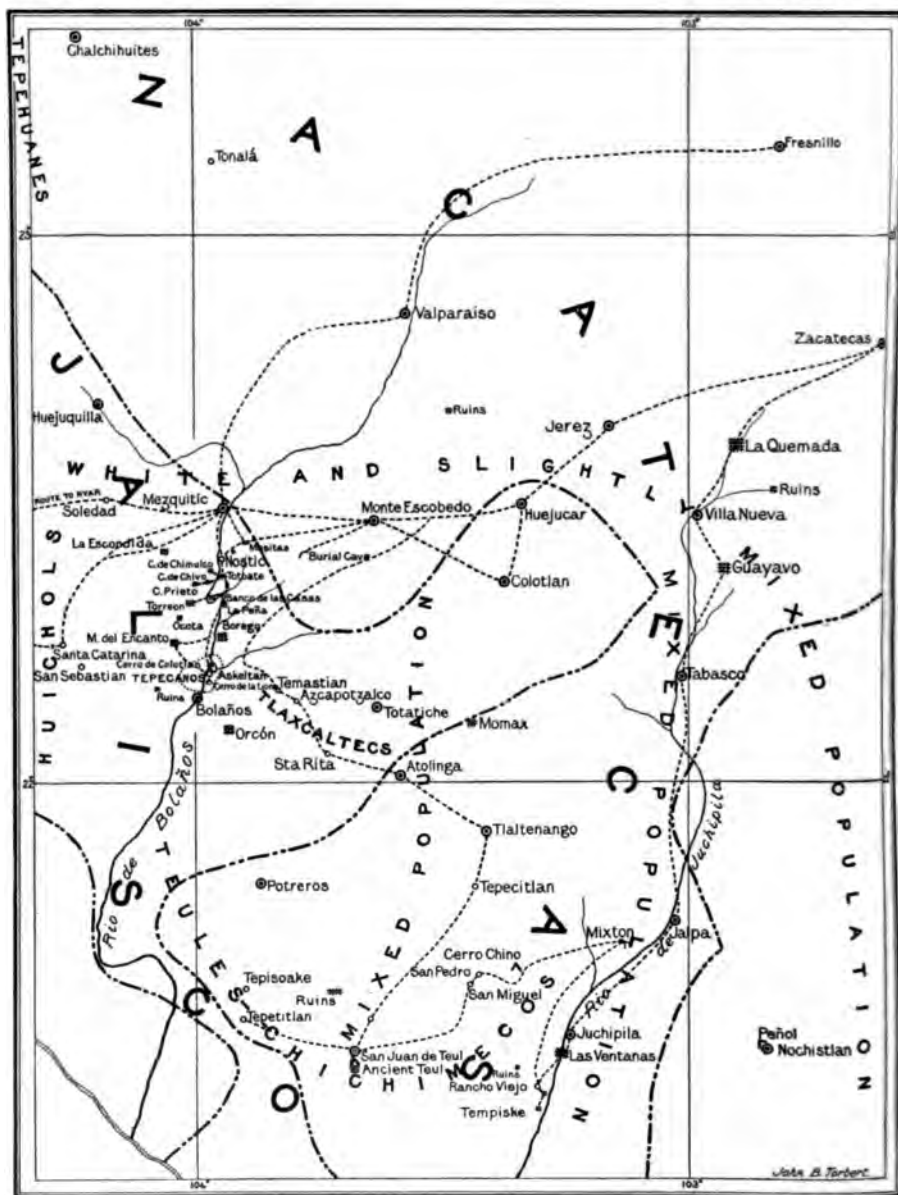
MR HARLAN I. SMITH, of the American Museum of Natural History, is at North Yakima, Washington, where he has begun an investigation of the archeology of that part of the valley of Columbia river east of the Dalles and south of the British Columbia boundary. This work is a continuation of his general reconnoissance of the Northwest, and it is expected that the present research will occupy four or five months.

THE RUSSIAN GEOGRAPHICAL SOCIETY has awarded the large gold medals of its section of ethnography to Prof. V. A. Zhukovsky for his work on folklore in Persia, and to V. N. Perets for ethnological work.

M. SALOMON REINACH, the distinguished French archeologist, was made an officer of the Légion d'Honneur on the occasion of the centennial of l'École de Rome.

THE STOCKHOLM SOCIETY OF ANTHROPOLOGY AND GEOGRAPHY has awarded its Vega medal to Professor von Richthofen of Berlin.

THE DEATH of Dr H. Schurtz, assistant in ethnography in the museum at Bremen, has been announced.



MAP OF NORTHERN JALISCO AND SOUTHERN ZACATECAS, SHOWING LOCATION OF
RUINS AND AUTHOR'S JOURNEY

({ } { } { } Ruins. - - - State boundaries. Author's journey.)

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THE REGION OF THE ANCIENT "CHICHIMECS," WITH NOTES ON THE TEPECANOS AND THE RUIN OF LA QUEMADA, MEXICO¹

By ALEŠ HRDLIČKA

INTRODUCTION

The great mountainous region of northern Mexico that bore originally, with the Spanish, the name of Nueva Galicia and of which, somewhat subsequently, a large part was included in the Provincia de San Francisco de Zacatecas, is to this day an almost unknown country to anthropology. This region extends from the valley of Nochistlan in the east to the sierra of the Guachichiles or Huicholes in the west, and from the Rio Grande or Santiago in the south to the Tepehuane country in the north; that is, from a line about half a degree east of longitude 103° to a little west of longitude 104° , and approximately between 21° and 23° of latitude. The territory comprises the northern part of the present Mexican state of Jalisco, southern Zacatecas, and the western point of Aguas Calientes.

To the early Spaniards this was preëminently the country of *barbaros*, *caribes*, *mekkos*, and *chichimecos*, among whom were distinguished mainly the "Cazcanes," "Teules-Chichimecos," "Tepecanoses," and "Zacatecos."² The term "Chichimec," whatever may have

¹ Published by permission of the American Museum of Natural History. Photographic illustrations from negatives by the author, now the property of the Museum.

² See Orozco y Berra, *Geografía de las Lenguas*, map and text; Mota Padilla, *Hist. de la Conquista de la Nueva Galicia*; Arlegui, *Cronica de San Francisco de Zacatecas*; H. H. Bancroft, *Native Races of the Pacific States*, vol. 1; Icazbalceta, *Coleccion de Documentos*, t. 11; Herrera, *Hist. Gen.*, dec. VII, lib. II, cap. XII; Torquemada, *Monarquia Indiana*, t. 1, p. 81 et seq.; and other historians.

been its meaning originally, or in the valley of Mexico, was here applied as a term of derision, or rather as a communal surname, expressing very much the same sentiment as *barbaros*, to all the tribes indiscriminately and without any expressed intention of connecting them ethnically with the Chichimecs of Anahuac or even with each other.

Judging from the number of warriors met by the Spaniards in this section, it is evident, even if an allowance be made for possible exaggeration, that it must have been well peopled; but there is only limited knowledge of the actual settlements. The best known of these were apparently Nochistlan and Teul; other larger towns occasionally referred to¹ are Juchipila and Colotlan. La Quemada is mentioned, but already as a ruin. All that is recorded of other settlements is that they were situated generally on steep and barely accessible elevations.

As to any possible remains of these settlements, or of the natives who built them, nothing is known. The great La Quemada alone has been visited and described by several archeologists.² Lumholtz, on his journey to the Huichols, touched the northwestern corner of this territory, but did not make any explorations or collections. Miss Britton, an American lady interested in an amateur way in Mexican archeology, visited, a few years ago, Totatiche, Teul, Juchipila, and Nochistlan, but thus far has published nothing on her observations.

The work on which I shall here report was largely unplanned and incidental. My presence in Mexico was in the interest of physical anthropology, and even in all the exploration and excavation that I finally undertook, the principal motive of my search was the physical remains of the prehistoric people. If I gathered anything more, it was for its intimate association with the skeletons and to save it from destruction, or, what is but little better, dispersion. In the more remote parts of Mexico, such as I speak of, nothing is saved. This is the home of the periodical treasure hunter, who, as soon as the dry season sets in and affords him leisure, goes to dig for money, buried during revolutions, wherever there is a cave

¹ Mota Padilla, *op. cit.*, p. 55.

² Principally Berghes, Tarayre, Nebel, and Batres.

or a ruin. That is usually the last of the human remains of whatever nature that the cave or ruin contained, most of them being broken on the spot and the rest sold to the first comer or given to some friend or to children. Under these conditions Mexico itself should be grateful to those who at no small risk at times save here and there the relics of its past cultures.

The notes here published are a part of the results of three expeditions, from the last of which I returned at the close of 1902. The expense of the first of these journeys was borne by the American Museum of Natural History; the second by Dr Frederic E. Hyde, jr., and the last by Mr B. Talbot B. Hyde, of New York, the whole work being under the general supervision of Prof. F. W. Putnam.

It was on a journey from Mezquitic to the remnant of the Tepecano Indians, in the valley of the Rio de Bolaños, northern Jalisco, after having visited the Huichols early in May, 1898, that I learned of certain ruins in the neighborhood and made the first explorations. In the early half of 1902 I extended these researches southward through the valley mentioned, and in the latter part of that year pursued them farther southward and eastward to Zacatecas. My journeys are indicated on the accompanying map (plate xxxvii).

The present notes are given not so much as a record of results as an incentive to further investigation in the region; and they are made to follow, without regard to chronology, the route of travel. The descriptions of the archeological objects recovered and of the skeletons, as well as the detailed observations in physical anthropology, are reserved for future publication.

THE VALLEY OF THE RIO DE BOLAÑOS

The valley of the Bolaños is a deep *barranca*, in places several miles broad, situated between two parts of the sierra. It begins practically at Fresnillo, but more definitely a little above Mezquitic,¹ and extends in a south-southwesterly to a nearly southerly direction to and beyond Askeltan, the seat of the Tepecanos. The whole valley

¹Originally San Juan Bautista de Mezquitic (see Mota Padilla, p. 354; also Arlegui), today a town of about 2500 inhabitants, situated in the northern expanded portion of the valley of the Rio de Bolaños, three days' horseback journey, or a little over 100 miles, from Fresnillo or from Zacatecas.

is traversed by the stream from which it takes its name and which was largely influential in its formation. Above Mezquitic, and again some distance below Nostic,¹ the valley is more or less "filled up" with secondary elevations and mesas, among which the river of Bolaños and its tributaries run in often narrow gorges with here and there high, steep to nearly perpendicular walls. The greatest width of the valley at its base may exceed eight miles (a little south of Mezquitic); in other places, as at the hot springs, it is but a narrow cañon. Geologically the whole region is granitic and volcanic. The river is mostly shallow and offers no obstacles to travel during the dry period, but becomes quite impassable at the height of the rainy season. The population south of Nostic to Askeltan is insignificant, and with the one exception to be mentioned later, is wholly mixed or Mexican. No Indians except the Tepecanos are now settled in the valley; but occasionally one here meets traveling Huichols and even Coras. The valley is the westernmost of four (Nochistlan, Juchipila, Tlaltenango, and Bolaños) extensive and nearly equally deep, parallel depressions, that run, separated by high mountain ridges or narrow plateaus, from north to south through the region under consideration.

INDIAN OCCUPANTS NORTH OF ASKELTAN

In the Mezquitic part of the valley there are some rather vague traditions among the whites in regard to Indians who occupied the district "a long time ago." There are other and more definite traditions of occupancy of parts of the valley more recently by the Huichols. I was shown caves near Mezquitic with remnants of rude stone habitations, where it is said these Indians have dwelt, and I have found figures of deer on stones looking very much like those made by the Huichols of today. As the mountain range of this tribe forms one of the western boundaries of the valley, the fact that there were at some time some Huichol settlements in the valley itself is quite possible.

In Nostic there still lives a single pure-blood Indian (Macias) who is a remnant of those who occupied the pueblo during the first

¹ A small but old village ("Nastic" in Mota Padilla, p. 354) about four and a half miles south of Mezquitic, on the Rio de Bolaños.

half of the nineteenth century. This man, who is about seventy years of age, informed me that during his childhood the natives in Nostic were still numerous, but were annihilated by epidemics and during a revolution. They spoke the "lengua Mexicana," which is the Nahua (a fact confirmed to me independently by the Tepecanos); this makes it probable that they were the progeny not of the original people of the pueblo, but of the introduced *fronterizos* or Tlaxcaltecos.

ANCIENT RUINS IN THE VALLEY OF THE RIO DE BOLAÑOS

Remains of Indian occupancy, such as stone implements, shell ornaments, pottery, etc., are found throughout the valley of the Bolaños; but there are also a number of more or less large and well-defined settlements which will repay further study.

Mesitas.—The first ruins of any extent occur southeast of the town of Mezquitic, and are situated about half-way between this and Nostic, on a part of a smaller irregular plain or terrace at about the middle of the eastern slope of the sierra of Monte Escobedo. The terrace is over a mile in width, and where the ruins are situated it is riven by a number of deep, narrow gorges. These gorges converge from all directions into a common cañon, which, in the form of an ellipse, completely surrounds an oblong, central elevation, the top of which is diamond-shaped. The result of the formation is a number of converging points of land with the isolated part in the middle. During the rainy season this central part is completely surrounded with water, and is then actually an island.

The surfaces of all the points, as well as that of the central part, are level, and show in most places only the bare bed-rock; but in a few spots there is a thin layer of black soil. The sides of the points, as well as those of the central part, are steep, and most of them can be scaled only with difficulty. From a yard to several yards from the top the rock on some of the points is perpendicular, and this feature is very pronounced about the entire central portion.¹

The central mesa measures two hundred paces in length and forty in maximum width; and it, as well as the various points, is

¹ Such cliff formation is quite common about mesas or table-mountains in Mexico.

covered with ruins. The place bears no name, but from its character it will be referred to as the Mesitas.¹

The more important ruins are found on the middle portion. There were apparently habitations as well as other large structures on this portion, and there was also a conical mound of moderate size. The remains invariably consist of low, square or oblong foundations, built of quadrangular stones, of moderately large dwellings. Most of the dwellings were somewhat larger than are the average huts of the Huichols today.

The foundations are quite regular in form. They consist of one, two, or exceptionally of three superimposed layers of flat, quadrangular stones, varying from a foot and a half to more than three feet in length, from a foot to two feet in width, and from two to four inches in thickness.² The stones were apparently carefully selected, so as to form a fairly compact and regular wall. Some of the stones seen were nicely hewn or rubbed into the desired shape. No cement or mud mortar now remains in the joints of the masonry.

The main body of the house must have been of wood or reeds, as there are but very few loose stones about to account for the superstructure; however, I have never found a trace of wood on or in the ground about the foundations, which absence probably speaks for the age of the ruins. According to all indications the wooden parts of the dwellings were placed but superficially, and in time were completely washed away or destroyed by other agencies. No fireplaces are visible, these also probably having been washed away. The foundations of the houses are in some places almost entirely exposed, resting on the bed-rock; in others they are nearly covered with accumulated earth. The entire group of ruins bears indication of having been abandoned in the far past, and of having been disturbed but very little since, except by the elements. There are no traces today of ancient cultivation of the soil in the neighborhood.

Potsherds and pieces of obsidian were found scattered in all the ruins, but were not very numerous. The potsherds collected³ are

¹ *Mesa*, 'table,' 'table-land'; *mesita*, a small mesa.

² Specimens 30-10661, 10662, 10681, in the American Museum of Natural History.

³ These, as well as the majority of the specimens mentioned in this paper, are deposited in the American Museum of Natural History, New York City.

mostly thick, crude, and unpolished, but some are decorated with incisions or painted red on one surface. Besides these, however, there were found fragments of thinner and finer pottery, nicely colored on one or both sides, generally in red or brownish, and in most instances polished.

The central mesita is exceedingly difficult to scale, and it has probably been visited but very few times since it was originally abandoned. The place was apparently fortified, for there still exist accumulations of stones, well adapted to defensive purposes, along the edges and particularly about the single possible approach, toward the northeast. A number of the structures here were much larger than the ordinary dwellings, and two or three of them were situated on a slight artificial elevation. The foundations of all these larger houses are like those previously mentioned, quadrangular and very regular, but there are more hewn stones found in them than in the foundations of the dwellings proper. All the large buildings and the mound are situated on the northeastern three-fifths of the mesita.

Examination of the surface and slight excavation in the ruins and mound resulted in finding two large, well-made stone mortars; two slabs of stone with markings; a small, nicely made stone fetish (animal figure); a well-chipped white stone arrowpoint; and many potsherds and chips of obsidian. The larger mortar, made of the hard trachyte of the region, crumbled to pieces from the effects of long exposure, as if made from very soft sandstone.

The mound was almost wholly made up of stones and proved to be a burial mound, containing the remnants of a number of cremated human bodies. It was here that the animal figure was discovered.

A cave was found in the southeastern wall of the central mesita, but it contained only a few potsherds.

Information from all sources was gathered concerning other ruins in the valley, and gradually a considerable number of localities where some one knew of ruined *fincas* were recorded. But the information was generally meager and not always reliable. Many of the localities mentioned were distant as well as difficult of approach, but the results of my visits generally proved to be more interesting than was expected.

Nostic. — La Escondida. — On the mesas to the east of the little town of Nostic are some remnants of old habitations. From one of these I have seen a very well made, even somewhat artistic, large, circular stone that probably served as a pedestal to a statue. In the fields about Nostic ancient objects are found quite frequently. To the west of Nostic rises a hill called Potrero de Chimulco, or Cerro de Chimulco, upon which ruins are found; and farther in the same direction, at the foot of the Sierra Huichol, near the rancho La Estancia, is a large, important ruin called La Escondida. In this ruin, which was explored only superficially, there are many remnants of dwellings similar to those at Mesitas and also larger structures and mounds. From this ruin I obtained several objects, among which is a fine ceremonial axe; and from an apparently ancient burial in a nearby cave was excavated a complete skeleton.

Totoate. — The third ruin, and one that proved to be of much archeological interest, lies a little less than three miles south of Nostic, on the point of a long, isolated, generally steep-walled but not lofty mesa, which for two-thirds of its extent is river-bound. The point which projects northward like a Λ into the expanding part of the valley is covered with the ruins of an ancient settlement. This is known as Totoate, a name apparently of Nahua origin and pertaining to water. This is the only ruin that was explored at all thoroughly, and the results were very surprising.

As at the Mesitas, the southern portion of the point is covered with ruins of smaller structures, probably dwellings, while on the extremity itself, to the northeast of the body of the ruins, I found a group of mounds a rough sketch of which is given in the accompanying illustration (figure 9).

The ruins consist only of foundations, or bases, and are of the same general character as those at Mesitas or La Escondida; indeed this is true of all those yet to be mentioned in this region. Hewn or rubbed, oblong building stones are more numerous at Totoate than in the other ruins. The smaller structures, mostly of quadrilateral but a few of circular form, are rather close together. The surface soil is rich in fragments of thick and crude as well as of finer, painted pottery, and in chips of obsidian, chalcedony, and other stones.

The first noteworthy find in this ruin consisted of a considerable number of stone slabs and several portions of the bed-rock (one of which measured over six yards square), with peculiar, unusually well made and deeply graven petroglyphs. These carvings are all executed in a similar manner, and are very different from those generally seen farther north. They consist of broad, deep grooves, principally curves, and of cup-shaped hollows in the course of the

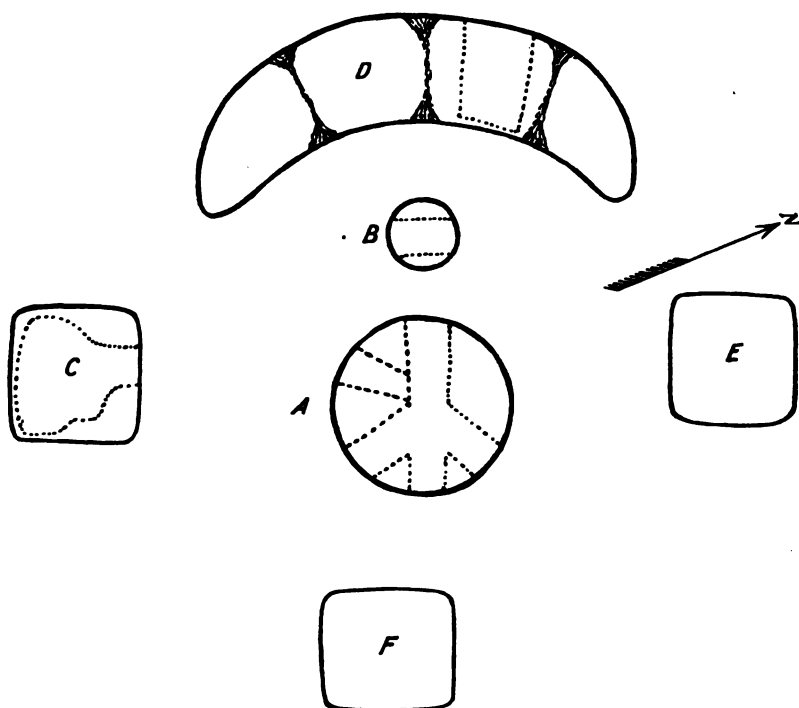


FIG. 9.—The mounds of Totoate. (Dotted lines indicate the author's excavations.)

lines. Many of the forms represent a coil or a part of one, others a human-like figure with a head-dress or striæ radiating from the head, and there are still other designs. These carvings, although deeply made in hard trachyte, are so greatly weather-worn as in some instances to be barely traceable (plate xxxviii and figure 10).

Owing to limitations of space I shall omit details and restrict myself to the statement that in search for burials I excavated mounds

A, B, C, and a part of D (figure 9). Mound A was nearly 200 feet in circumference and over 11 feet in maximum height. It consisted of a thick outer layer of stones (including some broken slabs with petroglyphs), beneath which was a large quantity of stones and earth, and of a central stone house of seven or eight rooms, a part of which was filled with stones and earth and a part with stone-covered cremation burials.

The walls of the house were over seven feet high, well built of selected but unhewn flat stones laid in and plastered with adobe mortar. This adobe coating (a piece of which is preserved in the

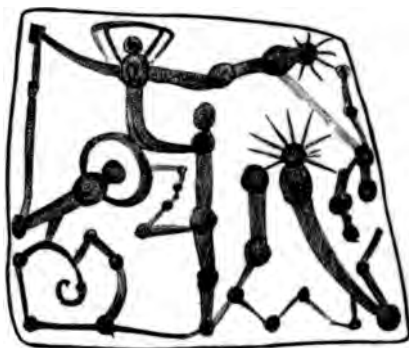


FIG. 10. — Detail of rock-carvings shown in plate xxxviii.

American Museum) was mostly destroyed; but the remnants found show many small parallel tubes, such as could be produced by extended stalks of *sacate*.¹ There were small doorways and little square niches in the walls, recalling similar structures in the ancient pueblos of New Mexico.

The remnants of cremated bodies were closely packed in three of the central rooms, and with them were buried many fine specimens of pottery, some of which are unique in character (plate xxxix), as well as other objects. There were also charred remnants of well-woven cloth, large shell trumpets, shell nose-ornaments (plate xli, 1-6), ornaments of pyrites, amazon-stone pendants, obsidian knives,

¹ Apparently exactly similar specimens of mortar have been reported by Guillemin-Tarayre from La Quemada ruin. See *Archives de la Commission Scientifique du Mexique*, t. III, pp. 374-375, Paris, 1869.



ONE OF THE PETROGLYPHS FROM TOTOATE
(Maximum height, 68 cm ; maximum breadth, 71 cm)



a fine ceremonial axe with a well-carved human face (plate XL, 3), etc.¹

Mound B, less than half as large as mound A, was composed of stones with some earth. Near its floor was an ordinary burial. No objects other than the bones were found here and these soon fell to pieces.

Mound C, which was large and flat, was composed of stones and earth, and yielded a number of burials of the ordinary type, some crude and some fine pottery, a quantity of amazon-stone beads, etc.

Mound D (uncompleted excavation) was found to be composed of probably four originally separate structures, the ruins of which have coalesced. Remnants of stone walls and two burials were found.

The cremated bones from mound A, all of which, though in small fragments, were preserved, belonged mostly to men, but there were also the bones of some women and children. Judging from these remnants, over fifty bodies must have been deposited in the three rooms. Many of the skulls are remarkable by reason of the thickness (non-pathological) of the cranial walls. Enough was reconstructed of two or three skulls to show their identity with those of the ordinary burials, as well as with the skull obtained near La Escondida, and with another later found south of Totoate. They all belonged to a subbrachy- to brachy-cephalic people of not very large stature (as shown by the remnants of the skeleton) or other proportions.

Cerro de Chivo. — Cerro Prieto. — To the west of Totoate, on the opposite side of the river, rises a more readily accessible mesa of similar height to the last. It is known as Cerro de Chivo (Goat hill) and its point shows numerous remnants of habitations similar to those of Totoate and Mesitas. A little farther to the west rises a higher, isolated ridge called Cerro Prieto (Dark hill), on which are also many remnants of ancient dwellings.

To the east of the mesa of Totoate lies a shallow valley, and here, as well as farther south, in the valley of an arroyo that opens from the east, are many low remains of stone habitations and also stone ridges that had been employed most probably for some agricultural purpose.

¹ Almost exactly the same form of stone axe has been found at La Quemada. (See Batres' report, pl. XX.)

Banco de las Casas.—Seven miles south of Totoate, and at the base of the southern extremity of the same mesa, is a small, now Mexican settlement called Temoaya. A little west of this, on the southernmost point of the mesa, is a quite extensive ruin. The locality is known in the neighborhood as the “Banco de las Casas.”

The ruin extends over two terraces of the mesa. It consists of many low stone foundations such as those at Totoate; but on the lower and more southerly bank there are remnants of larger

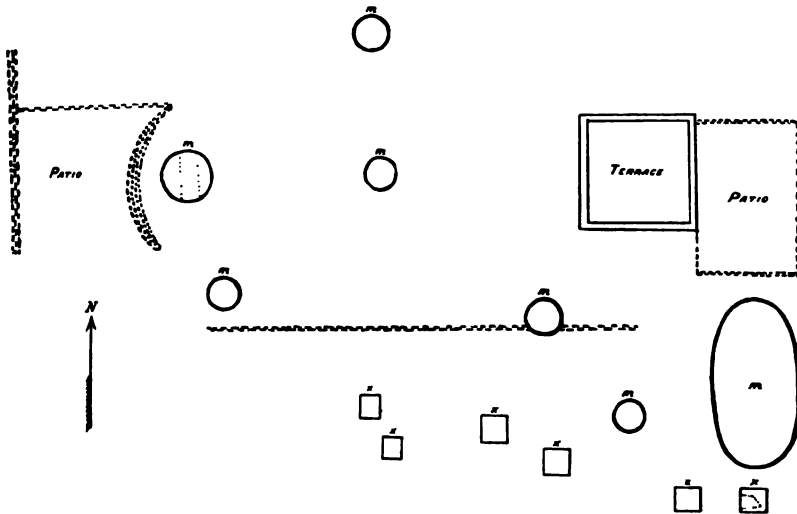


FIG. 11. — The mounds, etc., of the principal portion of the Banco de las Casas ruin.

structures, a number of *mogotes* (mounds), a ruin that probably was a temple, several very low, small, regularly square mounds, and a number of walls and *patios* (figure 11). A brief survey and a little digging resulted in the finding of a remnant of a large metate carried on the back of an animal figure, probably a turtle; several larger stones with petroglyphs, somewhat similar to those of Totoate; a number of oblong, conical stones without marking, some of which stood upright in the ground, apparently as originally planted; fifteen or sixteen oblong, nicely worked stone slabs with a large angular notch in the middle of one of the longer sides (figure 12);¹

¹ These stones were often found in pairs, and if superimposed the notches would form a central aperture.



THE INNER AND OUTER SURFACES OF TWO PAINT-INLAID BOWLS FROM TOTOATE

two slabs with central circular perforations, and a number of other larger worked stones ; a ceremonial, animal-form axe, and a few smaller articles. Slight digging was done in one of the conical mounds, but nothing was discovered.

The "temple" was a nearly square structure fifty to sixty feet in diameter. The stone walls are still six to ten feet high above the ground and on the top nearly six feet thick, built of selected but unworked flat stones. No trace of mortar is now visible. The inside of the structure had been intentionally filled with stones. Apparently the structure was originally a large, low pyramid or base, with possibly a wooden superstructure. In the filled area I found a large central depression, and near the sides a number of filled, crude stone cysts or holes leading downward ; a few fragments of

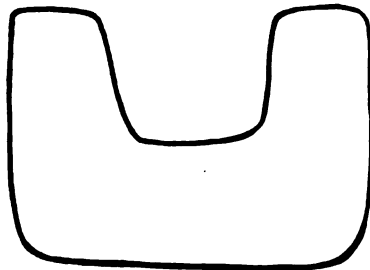


FIG. 12. — Stone slab with a large notch, from the Banco de las Casas ruin. (About one-sixth natural size.)

human bones were recovered from the only one of these which we explored somewhat. Later on I came across an almost identical cyst in the stone-filled court of the temple of La Quemada.

Torreón. — *Ocota.* — Looking directly west from the Banco de las Casas ruins, one sees rising a few miles distant from among the flatter elevations an isolated, steep, moderately high cone, locally known as the Torreón. The hill can be approached only by a circuitous road and with considerable difficulty ; but at its base, on the Banco de Zapote, as well as on the top, are found ruins of a large pueblo. Not very far from here, to the south, is a ranch called Ocota. The character of these ruins is the same as that of those already described.

La Peña. — A little south of Temoaya, and on the east side of the river, is a steep eminence, called La Peña, which is acces-

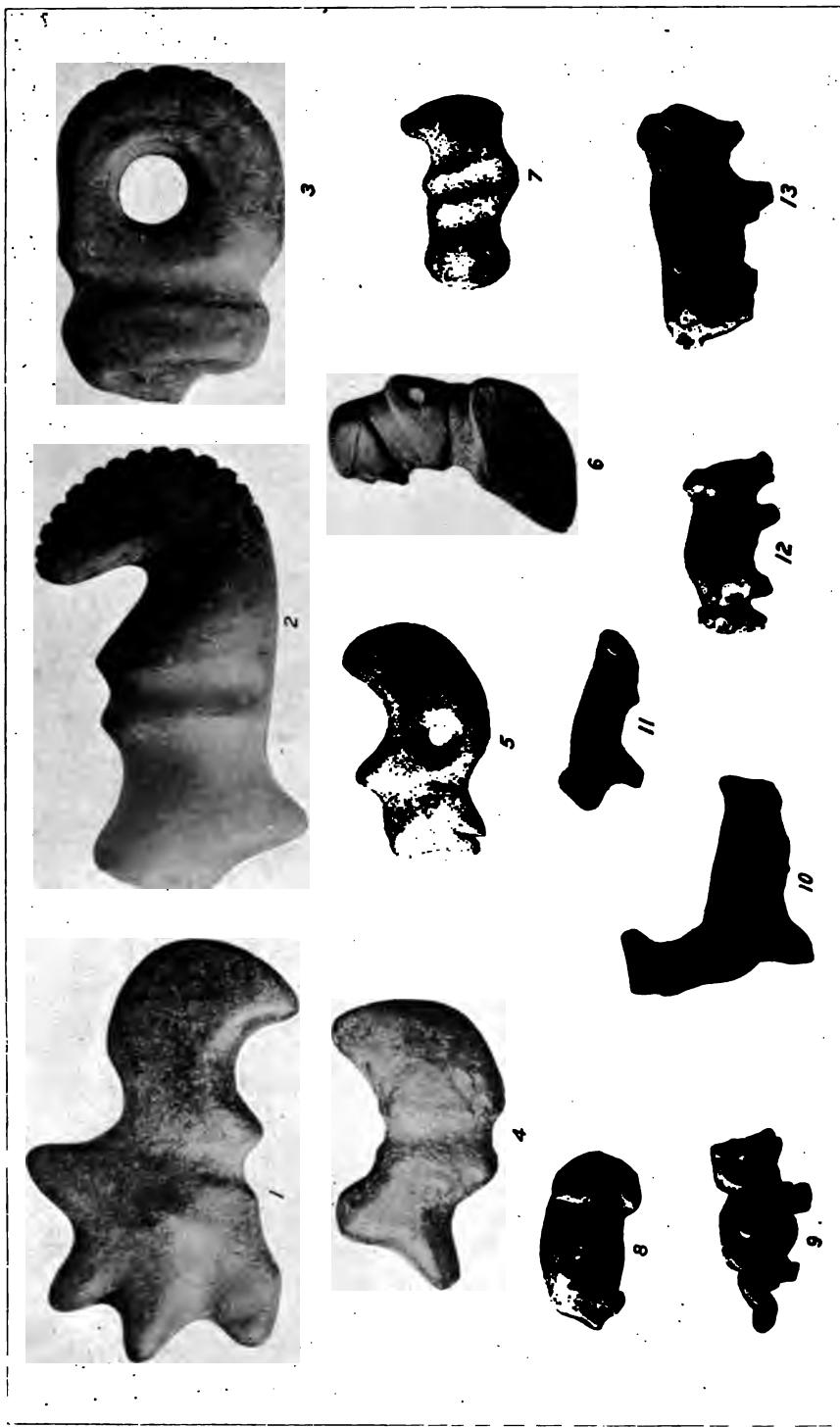
sible only with difficulty. The somewhat saddle-shaped top of this hill was apparently a fortification, and there are also well-preserved ruins of structures that probably served for religious purposes.

Mesa del Encanto. — Proceeding southward from La Peña one soon reaches a place where the river flows through a narrow cañon, between high and steep granitic walls that reach a particularly great height toward the east. Not far below this point, at the base of the eastern wall, is a large spring of hot water containing considerable sulphureted hydrogen. In the rocks of the neighborhood, and farther southward, are a number of caves, in some of which I came across chips of obsidian and other traces of Indian occupancy; none of the caves, however, contains structural remains.

Below the "ojo caliente" the country on both sides of the river down to Askeltan contains many more or less isolated mesas, and on several of these are found remnants of ancient habitations. In at least three of these localities the ruins are of sufficient importance to deserve separate mention. One of these locations, known as the Mesa del Encanto, is an oblong, entirely isolated piece of tableland, generally similar to although larger than the central portion at the Mesitas. This tableland, which is known also as the Cerro de Vonash, is a part of a larger elevation, called the Mesa de las Moras, and is situated a little more than three hours' horseback journey northwest of Askeltan.

The entire surface of the Mesa del Encanto is covered with the well-preserved foundations of stone structures, of the same general character — low, square or oblong, or more rarely rounded — as those of the ruins previously described. All these are constructed of stones more or less worked. There are three larger ruins, two mounds, and a sort of broad, long avenue bounded by very large slabs standing on edge. A part of the mesita (where at all accessible) was apparently fortified with stones.

Borego. — In nearly the same latitude, but on a mesa east of the river and best reached from the town of Monte Escobedo, lies the ruin of a large settlement called Borego (a sheep). I did not visit these remains, but according to information from a number of persons they are essentially identical with all the ruins previously de-



OBJECTS FROM THE TOTOATE GROUP OF RUINS

Figs. 1-7, Axes with human or animal heads; Figs. 8, 9, 12, 13, Lithomage figures of animals; Figs. 10, 11, Clay figures of animals. (All reduced in size.)



scribed, and, like the others, give promise of rich reward for prolonged and careful investigation.

Cerro de Colotlan. — The ruin known as the Cerro de Colotlan lies only about four miles by circuitous roads north-northeast of Askeltan. Although not very large, this seems to be one of the most promising ruins of the Totoate group for archeologic exploration.

The main part of the ruin is situated on a small but steep mesa, accessible from but one direction, on the right bank of the Río de Bolaños, which at this point makes a sweeping curve. Several stone mounds, one of them particularly large, arranged much like those at Totoate, are found at the northwestern base of the mesa.

The ruins on the flat top of the cerro must have served some important religious purpose. On the northwest extremity of the hill is a large, square *patio* or court nearly fifty feet in diameter, surrounded by a stone wall (three to eleven feet high), or rather ruin, for in some parts of it there very probably were rooms which are now filled or covered with building stones. Next to this large court, on the southern side, is a smaller one, formed on a low stone terrace about two feet in height, ascent to which is facilitated by three stone steps. A short distance eastward from this is a large, low, flat, quadrilateral mound. One or two other separate parts of the ruin are seen a little to the eastward of this mound. Throughout are found stone structures and foundations similar to those in the Banco de las Casas and in other ruins of the Totoate group.

In the large court a number of interesting antiquities were found. Near the middle of the place, in the ground, lies a large, ancient, worked and slightly decorated slab of stone. As its surface is still fully exposed and on a level with the surrounding surface of the court, there is no doubt that the slab has been used or cared for by the Tepecanos in recent times. On approaching the stone I was warned by my Tepecano companion not to touch it, and especially not to remove it, for "anybody who should move it," he said, "would die," *i. e.*, would be punished by the gods.

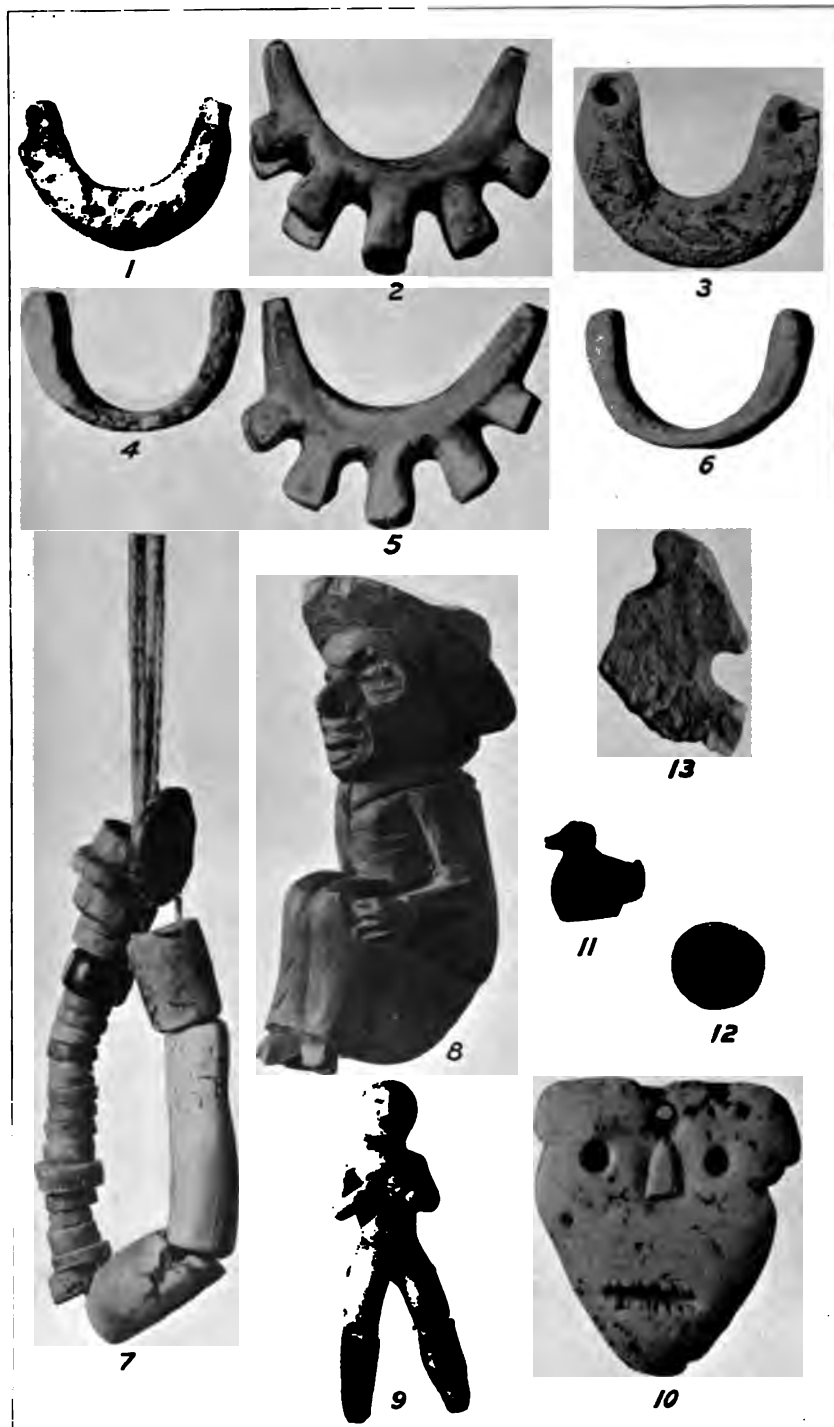
Near this slab lay a smaller hewn slab, two others with petroglyphs, two damaged stone idols, and several pieces of similar figures. None of these objects seemed to have been used recently, and, judging by the weathering, all indicate ancient origin. Some parts

of the petroglyphs are now quite indistinct, but enough is left to show workmanship generally similar although slightly inferior to that at Totoate. On each slab is a distinct coil figure, such as, with more or less variation, is common at Totoate. The two idols, each almost a foot and a half in height, are each made of a single piece of hard stone and consists of a hewn pedestal, a neat, deep groove around above this, and a somewhat crude recumbent figure of a mountain lion on the top. The details of the figurines are better than their general form. The mouth is large, while somewhat conventionalized teeth are exposed all around. Unfortunately the head and the mouth of the figures are the parts most damaged. The fragments referred to are those of one or two other stone lions. It is of interest to note that on the Cerro de la Liona, situated a little south of Askeltan and affording an imposing view from the Cerro de Colotlan, the Tepecanos (judging from the descriptions given us) up to this day keep and venerate two apparently similar lion images of stone. We made a laborious excursion to obtain or at least to see these figures, but as my inquiries about them had alarmed the Tepecanos, we found, on reaching the summit of the Cerro de la Liona, only an empty court with traces where the idols had stood.

On the highest part of the eastern wall of the large court, in a circular depression of moderate size, is a small, crude Tepecano shrine in which these Indians still place their *chimales* or prayer-sticks.

On the extensive, low, flat mound lay a number of nicely hewn stone slabs, varying in length up to three feet and of slightly less width. Their use is not apparent.

The Cerro de Colotlan ruin is the most southerly one of the Totoate group in the valley of the Rio de Bolaños. A little to the south is Askeltan, where there are some recent but apparently no ancient ruins. South of Askeltan, to Bolaños, the country is very rough, and I could obtain no information of any important ancient settlements within it; however, this region, as well as the valley south of Bolaños, seems well worthy of exploration. I have heard of ruins and even a graded pyramid near Tule, south and a little west of Askeltan; and the ruin known as Orcón, to



OBJECTS FROM THE TOTOATE GROUP OF RUINS, FROM THE TEPECANOS, AND
FROM NEAR PUEBLO VIEJO

Figs. 1-6, Shell nose-ornaments from the Totoate ruins; Fig. 7, A string of wampum from the Tepecanos; Fig. 8, A wooden figure, used by the Tepecanos in "sorcery;" Figs. 9-12, Lithomage fetishes, obtained from the Tepecanos; Fig. 13, Piece of a human skull from an ancient burial near Pueblo Viejo, southern Zacatecas, showing a double, artificial, probably post-mortem perforation.

the southeast of Askeltan, is less than a day's travel from the latter pueblo.

The usual lack of means and time, my unfitness for this class of work, and the existing Mexican laws — under which there is no restraint to destruction, but a stern prohibition against taking anything away, even though purely for the benefit of science—all obliged me to make but flying visits where days and weeks of arduous labor should profitably be spent. Consequently, I am able to give only brief notes instead of such an exhaustive account as would, owing to the richness of the field, be of considerable value to Mexican archeology.

Yet even from the little I was able to do it is plain that the region through which flows the Rio de Bolaños, between the towns of Mezquitic and Bolaños and very probably farther southward, was in some forgotten, though probably not very ancient time, the center of a considerable population ; and the remnants of the works of this people, and especially the objects recovered, speak in many ways of a high degree of culture peculiarly its own. If there were any subsequent "*barbaros*" here, such as the Spaniards described, they left no visible traces. I hope to be able to throw more light on the people when my physical studies are completed, as well as by the detailed description of the specimens to be published later ; but it may be stated here that my further researches tend to identify the Totoate group of people with that great population which occupied, up to the Spanish conquest, the whole of northern Jalisco and southern Zacatecas, of which the great fortress of La Quemada was once the northernmost bulwark, facing the country from which descended the waves of Tepehuane and possibly other invasions.

I wish here to acknowledge the valuable services rendered me, in connection with all my work in this region, by Don Cruz Vazquez del Mercado and by Señores Vicente Medrano and Genaro Santi-bañez, of Mezquitic, Jalisco.

THE TEPECANOS

Previous Knowledge of the Tribe.—The Tepecano Indians (plate XLII), the remnant of whom lives in northern Jalisco, is one of the least

known native tribes of Mexico, whether considered historically or in the light of present knowledge.¹ The present causes of this lack of knowledge are the smallness of the tribe, the distance of the region occupied by it from any considerable white settlement, and the very rough character of the country and its approaches. In addition to this the Tepecanos are feared by their superstitious white neighbors, partly on account of a supposed ferocity and partly for their "witchcraft," which hinders free intercourse and prevents the acquisition of much information concerning them. Even from their nearest neighbors one learns more imaginary tales and reports about the tribe than actual information.

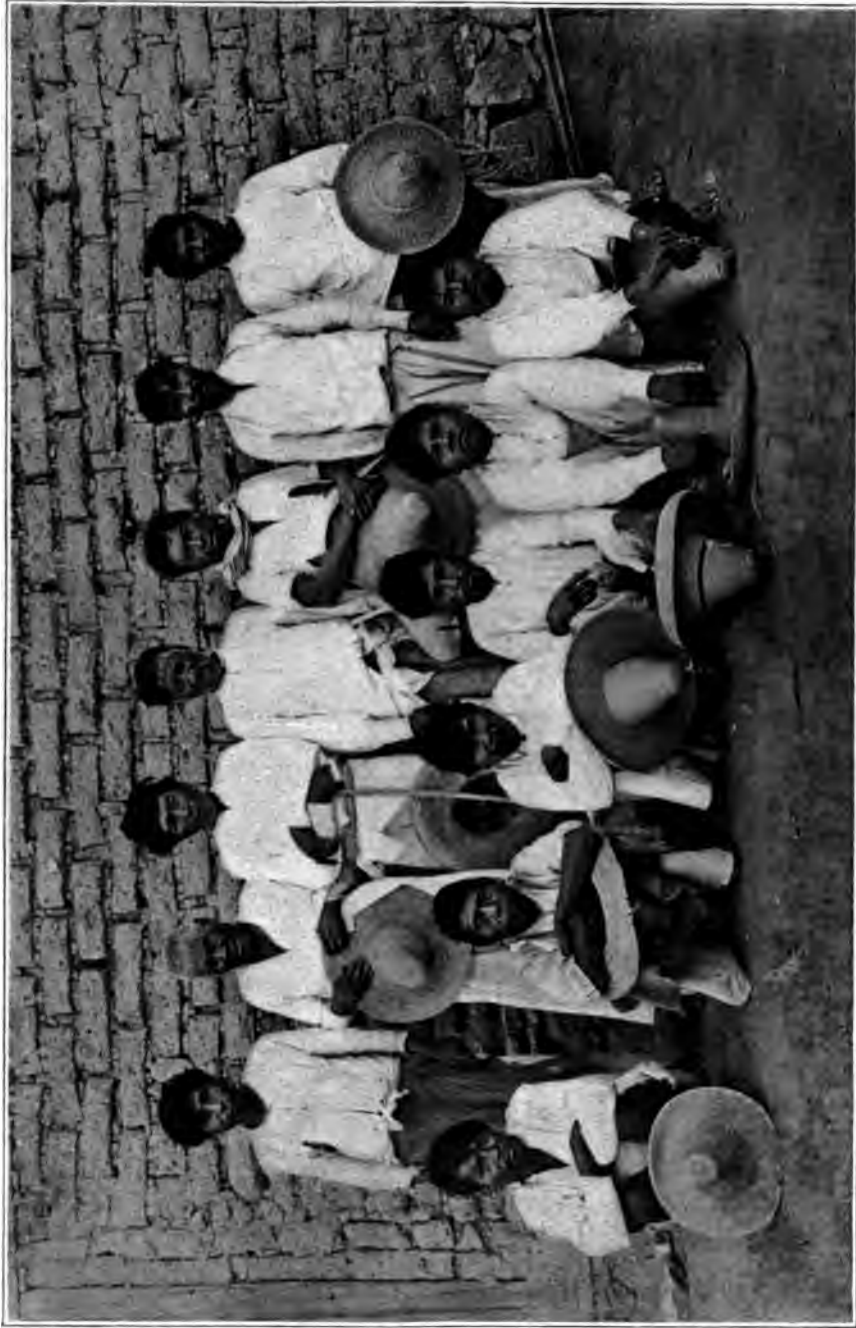
Historical references to the Tepecanos are very meager. The entire region from the river Tololotlan (Rio Grande) in the south to the town of Jerez in the north, a territory which in all probability embraced the early home of the Tepecanos, was included in what is known as the "conquest of New Galicia." The initial reduction of this province to Spanish power was accomplished in 1530 by Oñate and Chirinos, two of the captains of Nuño de Guzman. The indefinite records of this conquest, which are particularly poor in allusions to distinct peoples, contain no direct reference to the Tepecanos or to their country.

When the tribe of Tepecanos is mentioned by the earlier writers² it is considered as a branch of the "Chichimecan" family. Thus the only reference by Bancroft to this people is found among his notes on the "Chichimecos." A direct reference to the tribe is found in Orozco y Berra.³ According to this author (p. 279), "The Franciscan friars assure us in their narrations that the monasteries which they founded at Colotlan, Nostic, and Chimaltitlan were situated in the regions belonging to the family of Teules-Chichimecos, who used a special language called *Tepecano*." And again (pp. 284-285): "But the same Teules-Chichimecos were subdivided into fractions, with particular idioms. The first family were

¹ The name is probably derived from the Nahuatl, in which language there are several terms from which such a derivation would be possible, as *tepetl*, 'hill or mountain'; *aco*, 'above, on the top of'; *iacth*, 'point'; and there may be others. The Tepecanos call themselves also Hu-mā-kam or Hu-mat-kam, the meaning of which is close to 'the ones,' 'the people.'

² *Native Races of the Pacific States*, vol. 1, pp. 617-644; direct reference, p. 628. See also vol. V, p. 347 et seq; reference to Herrera.

³ *Geografía de las Lenguas*, 1864, pp. 279, 284-285.



GROUP OF TEPECANO MEN AT ASKELTAN



100

the *Cazcanes*, who occupied the region above (or from) the Rio Grande, and their neighbors were the Tecuexes and the Tepecanos."¹

Orozco y Berra, usually so well informed, considered the Tepecano language to be extinct; but on his map he allots to the tribe an extensive territory, much larger than it occupies today or has occupied within the memory of its oldest men.

In 1826 Capt. G. T. Lyon crossed from Zacatecas to Bolaños and gave an account of his journey² without referring to the Tepecanos.

Of modern students of Mexican ethnology or archeology only Lumholtz has approached the Tepecanos; he came within a day's journey of Askeltan, met a few of the Indians, and collected a few words of their language. Dr Nicolas León, of the City of Mexico, published in 1902, through my incentive, a brief vocabulary of the Tepecano language, obtained through a padre from one of the nearby Mexican settlements. But the tribe, as well as the whole valley of the Rio de Bolaños, is, with the exception of the work here referred to, a virgin field for anthropology.

Present Location. — Today the Tepecanos are confined to the pueblo of Askeltan³ and to not exceeding one hundred and fifty square miles of the valley of the Rio de Bolaños and the adjacent mountains. The nearest white or other Indian settlements, of any moment, to the Tepecano country are Nostic on the north, Sta Catarina and San Sebastian (Huichol) on the west, Huilacaltitlan (few Tepecanos) and especially Bolaños on the south, Temastian (descendants of introduced Tlaxcaltecs), and, farther on, Totatiche on the southeast to east.

Dwellings. — The pueblo of Askeltan consists of about forty dwellings, some of which are clustered on a low, rather unattractive hill or point, two-thirds of which are surrounded by the river, while others are scattered along the river itself. The village contains a

¹ "Mas los mismos teules chichimecos se subdividian en fracciones, con idiomas particulares. La primera familia que se presenta es la de los *cazcanes*, ocupada el terreno desde el Rio Grande confinando con los tecuexes y los tepecanos."

² Lyon, *Journal*, London, 1828.

³ Nahuatl *azcatl*, 'ants'; *tlán*, 'near,' 'near-by,' 'place of,' containing many. The name appears as Azcatlan in the text and on the map of Jalisco by A. Garcia Cubas in his *Atlas Metodico para la enseñanza de la geografia de la Republica Mexicana*, Mexico, 1874.

small, old, Spanish-built church, and in general has a sort of semi-civilized appearance; this was further enhanced during the latter part of 1902 by the Tepecanos permitting a Mexican trader to settle in their pueblo for the first time in its history.

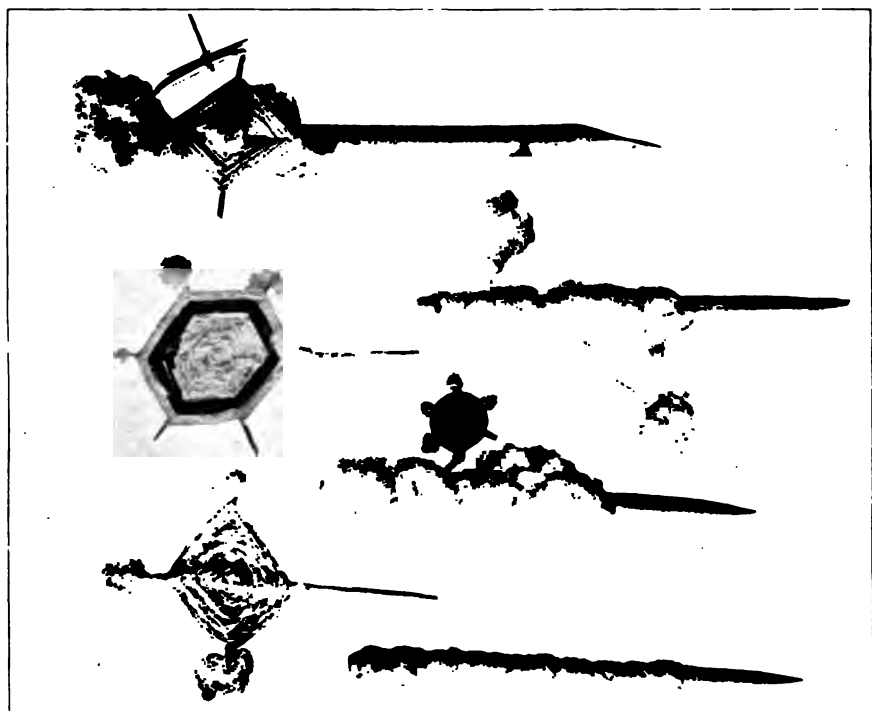
The dwellings of the Indians, where not modified by Spanish usages, consist of one or two rather small, low structures, built from irregular, unworked stones, with or without mortar. Occasionally there is in addition a more or less open shed built from boughs. The roofs of the houses are gabled or A-shaped, as are those of all the more primitive Indian dwellings in Jalisco, Tepic, and Zacatecas. The houses consist of a framework of native bamboo covered with *sacate*, or grass. A small separate group of such structures is usually surrounded by a rude stone enclosure. These dwellings are generally quadrangular, and the ruins of some of them are quite indistinguishable from the ancient ruins in that region. In the vicinity of the church are a few houses of more modern construction.

Dress.—All the male Tepecanos dress in a loose, collarless blouse shirt made of the cheap, unbleached but durable Mexican muslin; and in loose pantaloons of the same material, reaching below the calves, but often worn rolled up much higher. The head is protected by a home-made straw hat, somewhat of the shape of the ordinary Mexican sombrero, but smaller; on the feet the men wear simple rawhide sandals. A few of the men have in addition nice home-spun belts or pouches. The women wear a rather short muslin shirt, and a muslin or calico skirt, but seldom (except when visiting or traveling) any head-covering and apparently never any sandals. The little children run about nude or in a long shirt; older children dress like the parents.

The hair of the men is worn trimmed from three to six inches in length, while the women wear their hair in braids down the back.

There is no tattooing, and ordinarily, at least, no painting. Ornaments are now almost wholly restricted to women and girls, and consist of cheap rings, earrings, and beads.

Population.—The Tepecanos in the Bolaños valley estimate their entire number to exceed three hundred. Askeltan, which is their headquarters, could hardly accommodate more than about one





The cotton used is a native variety and is cultivated by the Tepecanos for ceremonial uses only. It is used loose and made up into a moderately thin yarn. The loose cotton is wrapped about the *chimále* stick, or about the ends of the ribs of the badges, or hung on the stick in tufts or in the form of pendants. It represents clouds and is used particularly on the May *chimáles* as a prayer offering for "good" clouds and water.

The badges vary in size, some being over five inches in diameter. They are generally plain white, but sometimes they are colored in two tints, pale blue and red being mostly employed. The colored and white yarn, where the two are employed, alternate in bands, when there are no other figures. In shape most of the badges are hexagonal; others are diamond-shaped, and in one instance I found a cylindrical one. Although I questioned the Tepecanos on this point a number of times (and I had the same experience among the Huichols), I was unable to learn that these badges had any significance other than that they are "nice" and "agreeable" to the deities.

The feathers are mostly, although not exclusively, those of a species of hawk; they may be used singly or in bunches, fastened to the top of a stick and pointing upward, or hanging as pendants. The beads fastened to the *chimáles* represent money and form a figurative tribute to the deity. The most valued beads are those of shell, found in the old ruins, but glass beads also are used. Occasionally a diminutive bow and arrows are attached to the *chimále* as pendants.¹

The Tepecanos have several definite spots where, from season to season, they deposit their *chimáles* by sticking the sharp edges into the ground. One of these shrines, to which an Indian led me and whence came the *chimáles* here illustrated (plate XLIII) as well as a

¹ The Tepecano *chimáles* differ from those of the nearby Huichols in a number of particulars. They are mostly of larger size; the thick stick is not used by the Huichols; the use of cotton and especially of cotton-yarn badges is almost restricted to the Tepecanos; the shape of the badges among the Tepecanos is much more frequently hexagonal than among the Huichols, who generally make the diamond-shaped ones; the Huichol badges are rarely if ever plain white, those of the Tepecanos quite often; the beads are much more common in Tepecano badges; and, finally, among the Huichols the use of the badges is much more extended than it is among the Tepecanos.

number of others in the American Museum, is a small, artificial structure of stone, partly covered but open eastward, constructed on the top of the main portion of the wall of the large *patio* in the ruin of the Cerro de Colotlan, a few miles north of Askeltan. It seems that each such depository belongs to a certain group of individuals. Here the men come after the middle of each May and deposit their *chimales*, each man his own and separately, with prayers for abundant water (on which their crops depend), but only "pure" water, and for freedom from tempests, disease, and other malevolent things. The cotton and badges and pendants are conceived as representatives or messengers of this prayer; the feathers symbolize the desired swift flight of the prayer, while the beads are an expression of a consciousness of indebtedness and a figurative tribute. This much could I gather from the discourses of my informant. During September (any part of the month, the end of the rainy season) and before the harvest *fiesta*, new *chimales* are made, and each individual, again the men only, passes the prepared sticks in a certain way around the head and body for "purification," then gives thanks to the deities and deposits his *chimale*. At times the *chimale* is used for supplications other than those here mentioned, and even in sorcery. Gourds, to which beads and cotton are pasted, are also deposited as offerings at the same places as the *chimales*.

Sorcery.—The Mexican neighbors of the Tepecanos greatly fear the latter on account of their supposed powers in sorcery. On one occasion I met two individuals each of whom knew of some "idols" of the tribe, but both refused all offers to lead me to the locality for fear the Tepecanos would revenge themselves by causing the right arm of the informant to wither. Eventually, on my last expedition, Don Nicolas, an exceptionally honest and intelligent ranchman who knows the Tepecanos better than any of their other neighbors (a part of his ranch being situated very near Askeltan), brought to me a wooden figure (plate XLI, 8) found in a cave where it had been deposited by one of the Indian sorcerers. This figure, I was assured, was a faithful representation of a certain Mexican who, some time before, did some injustice to the Tepecanos. One of the sorcerers of the tribe made the figure, affixed it to a plumed stick

or *chimale*, and deposited it in the cave from which it was later taken. The Mexican was soon afterward taken sick; but another Tepecano told of the figure, and as soon as this had been torn from the stick and removed from the cave the man rapidly recovered.

The harm-belief need not of course be considered; but what is of particular interest is the fact (of which, after all I heard on the subject and with the wooden image in my hand, there can not be much doubt) that the Tepecanos actually practise some "witchcraft" ceremony. This is probably a form of prayer which, like every other more important prayer, is represented by a prayer-stick and other object and deposited in one of the sacred shrines.

Traditions.—Among the Tepecanos there is one old man, highly regarded by all, for whom, on account of his wisdom and general behavior, I could think of no more fitting term than "Nestor"; and, curiously enough, he has been known to the others, ever since my first visit, as Nestor Aguilar. (He is the oldest man in the group of Tepecanos in plate XLII.) According to this sage, — and he talked in the assembly and with the expressed approval of a number of the other men, — the Tepecanos came a long time ago "from the north, from a *Rio Colorado*,¹ and were of the same people as the *barbaros* there. Those of Nostic were originally Tepecanos, but later became mixed with other people and talked their '*lengua Mexicana*.'² The Tepecanos extended to the Borego and Mesitas [both now apparently ancient ruins]. The Borego settlement was very old. Askeltan, Temastian, Acapulco, Huila (Huillacatlan), Santa Catarina, and Nostic were once occupied by branches of the same nation, who were originally a part of the *Mecos*.³ The *bar-*

¹ As I found later there is a river of this name near the northwestern boundary of Durango and Chihuahua. In a part of its valley lived (and a few remnants still live) the northern Tepehuanes.

² *Lengua Mexicana* among the natives invariably means the Nahuatl or "Aztec" language; the Spanish is known only as the "Castellano." On my last expedition to the region I found two old men, apparently pure-blood survivors of the early Indian inhabitants of the country, one in Nostic and one in Huejucar (a day's journey north-eastward), both of whom informed me that their forefathers spoke the "Mexicano." I should add that all the native names in this section are Nahuatl.

³ This was mentioned by Nestor in 1898. In May, 1902, while revisiting Santa Catarina, which, so far as our knowledge goes, was a pure Huichol pueblo, I came across a number of old petroglyphs, such as are found in the ruins a little north of Askel-

baros made war on the Tepecanos, but were repulsed. Then those of the Borego warred with those of Askeltan. It is long since this war took place, but it was after the white men came. The cause of it was a miraculous image of San Lorenzo which both villages claimed. Askeltan was then for a time called San Lorenzo. The pueblo received the name of *Askeltan*, from *asketes*, 'ants,' on account of the many people who lived there — as many as ants. The Tepecanos were themselves once *barbaros* after coming from the north."

A good deal more is known by the old man and by other Tepecanos, but it is rather dangerous ground to tread upon and should be left to students better qualified for such a line of investigation.

Social Customs. — No marriage is allowed until after puberty. The husband not infrequently takes two wives, but a woman has never two husbands. There is a little marital infelicity and some irregular prostitution.

The Tepecanos denied the occurrence of suicide in their tribe. They hurt or even kill each other occasionally, but only when made drunk by *sotol* or *tequila*. Transgressions are usually of a minor character and the punishment is either incarceration or lashing. A murderer, if caught, is delivered to the Mexican authorities.

In the last century, during periods of disturbance, several of the men became highwaymen and were killed by the Mexicans.

The dead were formerly buried in caves, but now many remains are interred in an old as well as in a new cemetery at Askeltan.

Intellectual Qualities. — After one has gained the confidence of the Tepecanos and they recognize in him a friend, and particularly one who does not deceive them, they become pleasant, display keen intelligence, and even become close companions; under these conditions they are in every way preferable to the ordinary Mexicans. But to reach such a stage of acquaintance and to retain the confidence of the Tepecano (owing, no doubt, to the usual experience of the Indians with whites) is quite a difficult matter, as may be seen from the following:

tan, for which the Huichols could offer no explanation except that they were made by "other people." The term *mecos* is well known to the Tepecanos and to other natives in that part of Jalisco and in southern Zacatecas.

I made, in all, three brief visits to the Tepecanos, one in 1898 and two in 1902; and as every one warned me of the suspicious nature of the people, I chose but a single guide and companion, Sr Cruz Velasquez.

On reaching Askeltan, in the first week of May, 1898, we found the town almost deserted, most of the inhabitants having gone to the sierra to pick the ripening pitayas. We saw a few women from afar, but, on perceiving us, these immediately sought seclusion, so that aside from a female patient to whom I was brought later, I did not see on this first visit, which occupied two days, a single woman make her appearance. The few male inhabitants, whom we found after some search, received us with much reserve and apparent distrust of our intentions, which we did not succeed in overcoming for many hours. We were conducted to the *gobernador*, or head of the village, who, after receiving some gifts, gave us one of his huts for shelter.

As an illustration of the distrust which the Indians felt toward us, I may mention that for more than half a day we were unable to buy, in the entire village, even with the aid of our host, a single goat, sheep, chicken, or egg, although there was no scarcity of such things in the settlement, and indeed we were thus restricted in our purchases of the necessities of life even after promising to make a general feast with the things bought. Gradually, however, the distrust gave way to kinder feelings. The people learned that I was a physician, and some called me to see the wife of one of the men who was very ill with malaria. Later the husband of the patient brought us as a gift a gourd full of fine *tuñas* (cactus fruit), and all became more friendly. Finally, when evening came, the house and the yard were filled with visitors, and the latter part of the evening and the following day were spent in complete confidence with all those who were in the village—the women, however, still remained in hiding. The Indians, some of whom were brought from the nearer mountains by their friends, surrounded us at all hours, and I was able to measure them and to make inquiries at pleasure. They even promised me two skulls which they kept in the village for certain of their ceremonies, but during the night these were spirited away to the mountains.

My second visit, in the spring of 1902, was very pleasant and profitable. I was enabled to record more physical data and also to make photographs; but the women, although they did not run away nor hide, still remained sufficiently distrustful to prevent me from measuring or photographing them. On my third visit (toward the close of 1902) the mere repetition of my visits and some photographs of individuals of the tribe which I brought with me, aroused new suspicions; all of which shows the care necessary in dealing with such people and indirectly reflects anything but credit on their past relations with the whites.

Medical and Physiological. — Information on these subjects, except where they bore on certain ceremonies, was given by the Tepecanos without hesitation.

The tribe, according to the information obtained, increases but little, if any, on account of the high death-rate. The most frequent causes of death among the adults are "fever" (in all probability typhoid), *calentura*, dysentery, and "a chest disease of short duration accompanied with pain and fever" (probably pneumonia). *Calentura* is quite prevalent.¹ The mortality of children is large, and is due chiefly to intestinal disorders, often caused by eating unripe melons and other fruits. *Calentura* is also frequently fatal among children.

Smallpox has appeared occasionally and its ravages caused numerous deaths.

A certain percentage of women die as a result of accident or from disease while pregnant, or at or shortly after childbirth.

The most common minor affections among the Tepecanos are pains in the joints (rheumatism?), headaches, some vertigo (the latter two mainly the effect of drinking to excess, which is not frequent, or of *calentura*), and conjunctivitis. Tumors occur occa-

¹ *Calentura* is a form of malaria, usually with frequent attacks. The disease is common among other Mexican tribes and attacks also the whites. It is usually a chronic disease, against which the Indians employ the *palo amargo* (native quinia) and other herbs, but not always with success. The patients become very debilitated and are obliged to keep to bed. Anæmia and emaciation follow, and may result in death. In most cases, however, restoration to health, after the sixth or eighth week of the malady I was told, slowly takes place. The disease attacks people of all ages and may recur in the same patient.

sionally. Insanity is very rare and is believed by the natives to be incurable.

The materia medica of the Tepecanos consists of many herbs, and, when these fail, of certain ceremonies. The herbs most commonly used are *palo amargo* (native cinchona), *herba de San Antonio*, and oak-leaves, for calentura; *palo mulato*, mainly for pains; *hi-ku-li* (obtained from the Huichols), *vervena*, *rosa de castilla*, the root of *ko-ho-te*, the seed of *ci-ci-va*, etc.

There is no higher degree of surgery, but the Tepecanos can well take care of broken limbs.

If a patient does not improve, the medicine-man is called. When he comes the patient lies down; the medicine-man prays and talks to the winds and spirits; then he lights a cigarette, draws in the smoke, and applies his mouth to the painful part of the body, which he bites a little or sucks, then puffs the smoke away from the patient, and spits into his own hands. With the saliva comes usually some small object,—a cactus spine, a little stone, or the like,—which the medicine-man either breaks up in his palm or throws into the fire. He then throws away the saliva. Occasionally the medicine-man gives also some remedy internally; but his prayers and touches, especially with the fingers moistened with saliva, and the exercises of his magic power are the essentials.

Conception generally follows very soon after marriage. Most women have four to six children, but there are some who have given birth to ten or even twelve. Only a few women are naturally sterile; others, I was assured, induce artificial sterility by means of herbs. Artificial abortion, also by means of herbs, I was told is not very rare.

The period of gestation lasts, according to the Tepecanos, nine months with a boy, but only seven or eight months with a girl. The mother has no means of guessing the sex of the child before parturition. The period of gestation is reckoned from the last menstruation. There are women who give birth to a child every year, and there are many who become pregnant before the last child is weaned.

Infants are suckled generally up to two years of age, though in not a few instances considerably later; but in addition they partake

also of all the kinds of food which the mother eats as soon as they can masticate a little. As among all Indians, the health of the child is often sacrificed through the desire of fully satisfying its appetite, and whatever the degree of medical skill in the tribe, there is, inexplicably, no knowledge or practice of prevention.

Children walk when about one year of age; they do not begin to talk before eighteen months or two years. The Indian mother does not stimulate the talking of her child as the white mother does. Before walking the Tepecano children crawl like white children, or even run a little on all fours.¹ The first dentition occurs most frequently in the latter part of the first year, in a minority of cases at about six months.

The occasional mother who "has no milk" nourishes her infant on the milk of goats or cows.

Parturition is generally accomplished with the aid of one or more related or friendly older women. There are no professional midwives, and the woman in childbirth is not secluded from her family or friends.

The average labor occupies about twelve hours. The woman is usually delivered squatting on her knees and toes, or on knees and toes and hands, with the lower limbs separated. In difficult labor the husband or brother will encircle her abdomen from behind with his arms and try to expel the child by pressure, which is continued without intermission as long as the man or the woman can stand it. If this heroic treatment does not accomplish the purpose, the medicine-man is called, and he proceeds with the woman much as with any other patient, but gives her at the same time a decoction of *herba buena* or *rosa de castilla*.

The new-born begins to suckle usually within two hours after birth. The infant is washed at once with luke-warm water, but the mother is not thoroughly cleansed until after four days. Women often have "fever" after confinement, which sometimes results in death. The abdomen of the mother is bandaged with the ordinary man's *faja*.² After confinement the woman is urged to remain abed

¹ I have seen this on several occasions among the Mexican Indians as well as among the Indians of southern United States.

² A woollen belt, ordinarily two or three inches in width and from two to four yards long.

as long as possible, and she generally stays indoors eight to fifteen or even thirty days.

Meal times and food are not so regular as among the whites ; this, however, is the rule among all Indians. Intoxicating drinks, as with other Indians, have a rapid and, in the beginning, generally exhilarating effect. Tobacco is used very moderately. As all Indians, the Tepecanos are good travelers. In pacing, two steps (from one mark of one foot to the next mark of the same) are counted as one. Both the men and the women are good although not steady workers.

Physical Characteristics. — However interesting the Tepecanos may be ethnologically, they are even more so from the point of view of physical anthropology. They are the shortest in stature and the most brachycephalic of all the Mexican tribes north of latitude 21°. They show quite close physical relation with the Tepehuanes, Huichols, Coras, southern Jalisco (Tuxpan) Nahuas, and Opatas, but this relation does not amount to tribal identity. My investigations afford reason for the belief that all of these people, as well as those now wholly or nearly extinct throughout Jalisco, a large part of southern Zacatecas, much of Durango, at least parts of Sinaloa and Sonora, and many now scattered over even a much wider radius, descended from one physical *souche* or type ; but this subject will be more appropriately treated in another place.

The physical appearance of the Tepecanos, aided by but not wholly due to their costume, is such that many of them can be quite easily distinguished from the Huichols ; yet there are among the Huichols, as well as among the other tribes above mentioned, not a few individuals who, if met near Askeltan, would be taken for typical Tepecanos.

Almost all the Askeltan natives appear short and rather thick-set. The color of the skin is generally a medium brown, not far from the ordinary mulatto tint, but with a slightly greater tinge of red than of yellow. The women are not lighter than the men, and some of them, as shown by their bare arms and the upper part of the chest, have the identical, fine, slightly reddish-brown common among pure blood Indians of the United States. The hair, as in other Indians, is of the same color as the black mane of a horse. The eyes are dark brown, hazy, conjunctivæ yellowish.

The heads of the Tepecanos are generally rather large, rounded, regular, and free from artificial or other deformity. The face is usually quite broad and seldom handsome, but it increases in interest or pleasantness with animation. The forehead is generally of good height and breadth, occasionally sloping backward in its upper half. The malar bones are large, but not excessive. In men the nose is quite short and broad, but not low or thick as in the negro; it is of moderate dimensions and of a nicer form in the women. The lower part of the face is generally strong. There is little, if any, facial but more of alveolar prognathism. The supraorbital ridges are well marked and in some individuals are large. The eyeslits are nearly as straight as in the whites to slightly oblique. The bridge of the nose is usually moderately convex; the point is generally blunt and thick, and frequently, especially in the older ones, overhangs somewhat the nasal septum and the borders of the nasal openings (pendant point); or the whole septum shows a descending inclination. The mouth is large. In the majority of cases the lips are slightly thicker than those of whites, but never like those of negroes. The chin is rather broad and of medium prominence, never receding. Both the upper lip and the chin in men are covered with straight, rare, rather coarse, black hair, from two to five centimeters in length. As among Indians generally, no beard grows on the sides of the cheeks. The teeth are well developed and regular. The ears are of medium size and well formed, but the lobules are in some cases attached. The body is generally regular and strong, the chest well developed and rather deep at the base. The hands and feet of the Tepecano men are well formed, somewhat short, not large. The toes gradually recede in size from the first. The legs are of almost the medium dimensions of those of whites, not so small as among other Indian tribes.

Without entering into further detail in this place, I append three brief tables which illustrate certain of the physical characters of the Tepecanos compared with those of several other tribes of northern Mexico. The relation of all these is obviously very close. The Tepehuanes as well as the Opatas show a larger proportion of mesocephaly, which is probably due to admixture with their neighbors, the meso- to dolicho-cephalic Tarahumares. It is

quite possible that the Tepecanos were originally but a part of the once great Tepehuane tribe and that their name is but a slight perversion of the term "Tepehuano."

Physical Characters of the Tepecanos Compared with Those of Other Tribes of Northern Mexico

STATURE

	TEPECANOS (25)	SOUTHERN TEPEHUANES (40)	HUICHOLS (30)	CORAS (53)	SO. JALISCO NAHUAS (50)	OPATAS, SONORA (31)
153-155	12.0%	%	3.3%	1.9%	%	%
155-160	36.0	17.5	16.7	13.2	12.0	22.6
160-165	40.0	30.0	36.7	35.8	46.0	19.4
165-170	12.0	42.5	36.7	37.7	32.0	29.0
170-175		5.0	6.7	11.3	6.0	16.1
175-180		2.5		1.9	2.0	16.1
180-185		2.5				

CEPHALIC INDEX, UNDEFORMED HEADS

	TEPECANOS (25)	SOUTHERN TEPEHUANES (40)	HUICHOLS (30)	CORAS (53)	SO. JALISCO NAHUAS (50)	OPATAS, SONORA (31)
Below 75.	%	2.5%	3.3%	2.0%	10.0%	6.4%
75-76			6.7	2.0		3.2
76-77		22.5	3.3	8.0	8.0	6.4
77-78	8.0	5.0	3.3	6.0	8.0	19.3
78-79		20.0	6.7	8.0	6.0	10.0
79-80	8.0	7.5	6.7	14.0	14.0	13.0
80-81	12.0	7.5	13.3	14.0	14.0	13.0
81-82	4.0	2.5	13.3	16.0	10.0	10.0
82-83	4.0	12.5	6.7	8.0	6.0	13.0
83-84	28.0	10.0	10.0	6.0	14.0	
84-85	16.0	10.0	13.3		4.0	6.4
85-86			3.3	2.0	4.0	
86-87	4.0		10.0	2.0	2.0	
87-88				4.0		
88-89	4.0					
89-90	4.0					

NASAL INDEX

TEPECANOS (27)	SOUTHERN TEPEHUANES	HUICHOLS	CORAS	SO. JALISCO NAHUAS	OPATAS, SONORA
Average 83.6	83.3	82.2	83.3	81.8	81.1

There remains the question whether the immediate ancestors of the Tepecanos dwelt at Totoate, Torreon, etc. This question physical anthropology can answer only so far as to assert that they are of the same type of people; but whether they are of the same tribe can be determined, if at all, only by archeologic and ethnologic research.

THE LANGUAGE OF THE TEPECANOS

The majority of the people, particularly the women, know but little Spanish; among themselves they employ the Tepecano dialect. The language sounds more pleasant than do some other Indian languages. It is quite easy to follow and reproduce the sounds and to distinguish many of the words. There are no harsh constructions and no unpleasant or unusual inflections of the voice; the pronunciation, however, differs slightly with different persons. I append to these notes a brief vocabulary and some phrases and sentences collected by me during intervals in my somatological work; and I give also for comparison a few words obtained later among the southern Tepehuanes of the district of Santa Maria de Ocotan, Durango. The terms were obtained in both cases from a group of men, which is safer than similar information from any single individual; they were also repeated by me to the men and only when easily understood were allowed to stand.

There is no doubt that a good linguist, in a reasonable time and without much expense, could conduct among this people, as among several other remnants of north Mexican tribes, a work of much value.

*Tepecano Vocabulary and Examples of Speech, with some Equivalents in the Southern Tepehuane Dialect*¹

NOTE. — In recording the Indian language, not being an expert linguist I found great difficulty in using the English alphabet, so finally em-

¹ The Southern Tepehuane equivalents follow the Tepecano words and are enclosed in parentheses.

ployed that of my native language, the Czech, in which I found very nearly all the sounds used by the Tepecanos, as well as by other Mexican tribes. Most of the sounds of the letters in this alphabet, as well as in those of the various Slavonic languages, are identical with the Spanish and Latin (continental) sounds, but there are a number of additional letters with sounds that represent exactly what is most difficult to represent with the English alphabet. In order to avoid all confusion I present herewith the exact and unvarying sound of every letter employed.

THE ALPHABET

- | | |
|--|---|
| a, as <i>a</i> in <i>marrow</i> . | l, as in <i>lion</i> , <i>tool</i> . |
| ā, as <i>a</i> in <i>mar</i> , <i>garden</i> . | m, as in <i>mother</i> , <i>boom</i> . |
| b, as in <i>ball</i> . | n, as in <i>near</i> , <i>bean</i> . |
| c, has the sound the nearest approach to which in English can be expressed by <i>ts</i> or <i>tz</i> ; it is found pure in such Latin words as <i>tercius</i> ; it is a clear elementary sound, not a combination. | ñ, has a nasal sound somewhat similar to <i>ng</i> , as in many Chinese words. |
| č, has a softer, moister sound than <i>c</i> , and stands intermediate between this and <i>č</i> ; it, as well as <i>č</i> , is common in other Indian languages, as the Hopi. | ñ, as <i>gn</i> in the French <i>mignon</i> , or that of <i>ni</i> in <i>pinion</i> . |
| č, as <i>ch</i> in <i>cherry</i> . | o, as in <i>mother</i> , or as <i>u</i> in <i>sun</i> . |
| đ, as in <i>dull</i> , <i>dollar</i> . | ō, as in <i>strong</i> , or as <i>a</i> in <i>ball</i> . |
| ď, or soft <i>d</i> , has a sound the nearest approach to which in English is probably the combined sound of the <i>d</i> and <i>i</i> in some words with the combination of <i>diē</i> . | p, as in <i>peak</i> , <i>heap</i> . |
| e, as in <i>bet</i> , <i>tempest</i> . | r, as in <i>rain</i> , <i>tear</i> . |
| ē, as <i>ē</i> in <i>fête</i> . | ř, is a difficult, soft, vibrating sound, the nearest approach to which in English can be made by the combination <i>rz</i> ; yet in the true <i>ř</i> , which is common to many Indian languages, no trace of <i>z</i> or <i>s</i> is audible. |
| f, as in <i>Faust</i> , <i>fish</i> . | s, as in <i>salt</i> , <i>last</i> . |
| g, as in <i>gall</i> , <i>get</i> . | š, as <i>sh</i> in <i>she</i> , <i>hush</i> . |
| h, as in <i>home</i> , <i>hot</i> . | t, as in <i>tear</i> , <i>meat</i> . |
| ch, as in the German <i>brauchen</i> , <i>lachen</i> . | ť, is soft <i>t</i> corresponding to the soft <i>d</i> . |
| i, as in <i>lily</i> , <i>boil</i> . | u, as <i>ou</i> in <i>Louis</i> . |
| ī, as <i>i</i> in <i>machine</i> . | ū, as <i>oo</i> in <i>tooth</i> . |
| j, as in the German language, as <i>Jesu</i> ; it is used where in English <i>y</i> would be employed. | v, as in <i>very</i> , <i>weave</i> . |
| k, as in <i>kine</i> , <i>peak</i> . | w, as in English (from which it is adopted). |
| | y, is closely related to <i>i</i> , but has a broader sound, as that of <i>y</i> in <i>Styria</i> . |
| | ȳ, is a prolonged <i>y</i> . |
| | z, as in <i>zenith</i> , <i>Zulu</i> . |
| | ž, as in <i>azure</i> . |

I. NOUNS.

<i>Father</i> , ta-ta (hin-čāt).	<i>son</i> , a-li.
<i>mother</i> , na-na (hin-ñān).	<i>daughter</i> , a-li.
<i>brother</i> , en-ha-dōn, ha-dūn (hin-čīš).	<i>children</i> , mā-ma-li.
<i>sister</i> , en-ha-dōn, en-mow-da (hin-zi-kō).	<i>grandfather</i> , bā-ba-li.
<i>brother of my father</i> } had-ni-den tā-	<i>grandmother</i> , kā-ha-li.
<i>sister of my father</i> } ta-pe.	<i>man</i> , ti-ōt, ti-ōn.
	<i>woman</i> , wo-ūf.
	<i>brother of my mother</i> } had-ni-den nā-
	<i>sister of my mother</i> } na-pe.
<i>Old man</i> , ko-li-gi-ja.	<i>a dead person</i> , iš-mūg.
<i>old woman</i> , o-ki-gi-ja.	<i>child</i> , ār.
<i>priest</i> [<i>padre</i>], om-ōg [“head”].	<i>pretty girl</i> , žap-māš.
<i>god</i> [<i>one of the gods</i>], si-do-kam.	<i>another one</i> [<i>person</i>], gu-maj.
<i>Head</i> , um-ōgh [initial <i>u</i> and terminal <i>gh</i> in all feeble].	<i>beard, mustache</i> , um-tum-wo.
<i>neck</i> , um-baik-tow.	<i>eye</i> , um-wuj.
<i>chest</i> , um-bās.	<i>ear</i> , um-nā-nak.
<i>hand</i> , um-nōb.	<i>nose</i> , um-dāk.
<i>foot</i> , um-tōn.	<i>lip</i> , um-tun.
<i>finger</i> , um-dē-do [from Spanish].	<i>tooth</i> , um-ta-tam.
<i>finger nail</i> , um-hōst.	<i>tongue</i> , um-nūn.
<i>hair</i> , um-kūp.	<i>chin</i> , um-kas.
<i>Deer</i> , el-suj-mar, ko-kōn. (so-I-mā-k.)	<i>pig</i> , ek-vi-mar.
<i>dog</i> , go-gōs.	<i>quail</i> , to-so-ru-i.
<i>bird</i> , ču-vīt. (u-ē.)	<i>chicken</i> , ta-vu-a.
<i>sheep</i> , to-tōk.	<i>goose</i> , ha-a.
	<i>cat</i> , mi-sō.
<i>Day</i> , ta-tāb, te-ši-mā-ši. (ta-nōk.)	<i>month</i> , hu-mat mas-za. (ma-sān.)
<i>night</i> , to-ka, t'-ka', tē-wa-tok. (to-kāk.)	<i>year</i> , hu-mat oj-da. (mā-km.)
<i>week</i> , humat si-mān [probably from Spanish <i>semana</i>].	
<i>Sun</i> , to-nōr. (hin-ē-hōg.)	<i>village</i> , kī-da-or, kī-dagh-ra.
<i>moon</i> , mas-za. (ma-sān.)	<i>Askeltan</i> , Kī-dagh-ra. ¹
<i>star</i> , hōp-pa. (hu-wag.)	<i>hat</i> , mō-bar.

¹ The Tepecanos themselves generally use the term *Kī-dagh-ra*, signifying “village.”

<i>earth</i> , bī-t-d, oj-da-kam. (den-wēr.)	<i>muslin pantaloons</i> , hi-na-twāř-kar.
<i>water</i> , sūr-di, tsū-di, sū-di. hā-va [from Sp. <i>agua</i> ?]. (sur-de-i.)	<i>health</i> , šav-hu-van.
<i>stone</i> , ho-daj. (hor-da-ji.)	<i>sky</i> , g-t-wař-gi.
<i>tree</i> , ūš. (u-ūc.)	<i>Inferno</i> , ne-žiš-ko-ōk.
<i>fire</i> , taj.	<i>cold</i> , iš-tu-čū-pi.
<i>road</i> , voi [from Spanish <i>voy</i> , I go?].	<i>lightning</i> , hp-tg-wa.
<i>arrow</i> , u-u.	<i>thunder</i> , ne-ō-ki-him.
<i>bow</i> , gāt.	<i>darkness</i> , sa-sa-va-či.
<i>wood</i> , ko-āg.	<i>sickness</i> , kōg-da-ra.
<i>house</i> , ki-ta-mi.	<i>malaria (calentura)</i> , iš-to-kōk-da.
<i>great house</i> , gu-wa-āk.	<i>the mountains</i> , hok-km-dam.
<i>roof</i> , wa-āk, wa-āh.	<i>maize</i> , hūn.
<i>room</i> , bīd-wa-āk.	<i>tostilla</i> , sā-mit.
	<i>a laborer</i> , dād-ge.
	<i>a word</i> , ni-jōk.

II. PRONOUNS.

<i>I</i> , a-ne, āl-ne, an-te, a-ni.	<i>we</i> , ā-tip, te-ti.
<i>thou</i> , ā-pe.	<i>they [male or female]</i> , hu-ga.
<i>he, she, it</i> , ap-te.	

III. ADJECTIVES AND NUMERALS.

<i>Good</i> , e-ši-ōb, a-me-ři-ōn.	<i>high</i> , tōb.
<i>better</i> , e-me-řap-toj.	<i>sweet</i> , eš-maj-ka-kam.
<i>bad</i> , e-a-nu-ōb, ja-map-toj [worse?]	<i>bitter</i> , ši-wu-kam.
<i>small</i> , liš-puk.	<i>warm</i> , niš-ho-ōk.
<i>great, large</i> , gū-eh.	<i>much</i> , vi-ja.
<i>stout, fat</i> , sāv-lak.	<i>many</i> , muj [probably from the Spanish].
<i>thin</i> , ši-gak-kam.	
<i>White</i> , iš-tā-kam. (š-čo-a.)	<i>green</i> , tyr-do-kam.
<i>black</i> , eš-tō-kam. (štuk.)	<i>blue</i> , eš-tyr-do-kam. (ču-ū-da.)
<i>yellow</i> , e-šām-kam. (i-šū-vam.)	<i>red</i> , ež-wuk-kam. (ši-wuk.)
<i>One</i> , u-ma, hu-maj, hū-mat. ¹ (ma ^a [the terminal <i>n</i> but slightly audible].)	<i>four</i> , mā-ko, mā-ko-ba. (mā-ko.)
<i>two</i> , gōk. (gōk.)	<i>five</i> , eš-to-mān. (ča-mam, šta-mam.)
<i>three</i> , vajk. (vajk.)	<i>six</i> , šev-uma, šiv-hupnaj. (ši-hu-ma ^a).

¹ Most of the Tepecanos know the numerals only up to six; only a few old men know them up to ten; numerals higher than ten could not be obtained at all.

seven, šil-gök. (šiv-gök.) *nine*, ši-māko. (šim-māko.)
eight, ši-vajk. (šiv-bejk, šiv-vajk.) *ten*, mā-huř. (mam-buř.)¹

IV. MISCELLANEOUS PARTS OF SPEECH.

Today, u-wl-mo. (now-řif.) *last year*, hm-āk.
tomorrow, wu-l-mo, as-ta-wl-mo *until* } hau-a, maj-kā-va.
 [Spanish *hasta* ?]. (wuj-mok.) *up to* }
day after tomorrow, asta-ma-ši-je-va, *far*, ko-ra. (mk.)
 dog-ma-ši-jeva. *yes*, a-ā-a. (hn-dō.)
yesterday, ta-kāb, ta-kāv. (ta- *no*, ja-ni. (ča-m, čam-mō.)
 kāv.) *what*, a-ša-psu-po-haj-da.

V. VERBS.²

I go, an-ty-ki-hi, an-te-va-hi. (ań- *I have*, a-ni vi-ja, a-ni ni-vi-ja.
 va-hi.) *he has* [or *holds*], šiš-tōn.
I am, āl-ne. *I know*, an-te-šmāt, a-ni-šmāt,
thou [you] *art*, āpe. a-niš-to-māt-ys.³
it is, u-iř, řiř. *thou* [you] *knowest*, a-ne-am-to-
I say, au-te po-toj. māt-ys, a-pe-miř-to-māt.
thou [you] *sayest*, a-ni po-toj. *he* [the other one] *knows*, g-ma-
he says, ap-te po-toj. jiř-to-māt-ys.
we [nos todos] *say*, wu-e-řir te-ti *we* [all] *know*, wu-e-řir, to-mat-ys.
 po-toj. *I want*, a-ni, so-ři-mỹm, a-niš ho-
I shall say [I shall tell to all], wuř *chi*, a-ni-žāk.
 au-te po-toj mū-hā-der. *I cut*, a-ni-hik-ta.
I said yesterday, ta-kāv au-te po-toj. *I eat*, au-te-va-to-hōk.
I return, an-ti-ba-nōr. *I hold*, šiš-to-nōm.

VI. COMPOSITION.⁴

One man, hu-maj ti-ōt. *many women*, muy wu-wo-ūf.
two men, gōk te-ti-ōt. *many children*, muy a-ār.
many men, muy ga-te-ti-ōt. *two years*, gōk oj-da.
many sons, muy a-la-li.

¹ Higher Tepehuane numerals are: 11, de-wan-ma^a; 12, de-man-gōk; 20, ma^a-ōp, ma^a-ōm; 40, gōk-om; 50, gōk-om-de-mān-buř; 60, vajk-om; 100, řta-mām-om.

² No infinitive was obtainable.

³ The terminal *ys* is ordinarily quite mute, and a similar condition is observable in other terminals.

⁴ These parts of speech do not seem to have quite such sharp, definite meanings as with us. Some of the versions are undoubtedly not quite literal; they are equivalents, modified by the Indian mode of thought and usages of expression.

Greeting on meeting, šav-hū-van *greeting on parting*, ki-nē-ki an-te-
[health]; en-gan-do šav-hū-van. va-nor.
response to same, a-hwa-nā-pe, who- *greeting for "good night,"* a-te-ři-
pa-nā-pe. hū-ro.

How far is it to Askeltan? Hō-šiš- *Where are you going?* Pā-pe-c-ki-
mō-kor ki-dagh-ra? hi?

It is not far, Ja-m-ko-ra. *I go to Askeltan*, An-ty-ki-hi ki-

It is very far, U-iž muy ko-ra. dagh-ra.

I went yesterday, Ta-kāv-an-te-ki-hi.

When are you going? Huyř-kat a- *Where are you going?* Pā-pes-te-
pso-hy-mi-ja? wa-hi?

When will you return? Huyř-kat a- *Where did you go?* Pā-mo pe-c-oj-
ps-ha-gu-šija? ma?

I shall come tomorrow, Wu-ȳ-mo ne-ha-g-ši-ja.

I shall go tomorrow, An-te-wa-hi as-ta wȳ-mo.

You travel very fast [Andas muy apriesa] } Pta-ki-ja m-šim-da.

You are a good traveler [Es muy andador] }

You returned promptly [Pronto dios la vuelta], P-je mš-mā-tat oj-ma.

I shall go to Mesquitic tomorrow, Wu-ȳ-mo ni-chȳ-mi-ja wī-hok-tam.

I go to the mountains, A-ni-wa-hi hok-kom-dām.

I return from the mountains, An-ti-ba-nōr hok-kom-dām-de.

Tomorrow I go to the sierra, Wu-ȳ-mo hok-kom-dām ho-ni-hin-da.

I went to the mountains yesterday, Ta-kāv-an-ti-hi-mok hok-kom-dām.

Two men go to the mountains, Gök töt am-hi-mi-ja hok-kom-dām.

Many men go to the sierra, Muy am-hi-mi-ja hok-kom-dām.

What news is there? Hās-to šiš-to *There is no news*, Nada [Sp.] ni
mo-yn. haš-to.

I shall tell tomorrow, after I have thought of it [given spontaneously :
Yo le dirē mañana, voy apensarme], Wu-ȳ-mo eu-pou-vān em-tur-de
ne-kau-te-me-mo.

All of you know except myself [given spontaneously : Ustedes todos saben
menor yo no sé], A-pe miš-to-māt a-nem-to-mā-tys.

I do not want any one [given spon- *Bring a stone*, Baj-ši-bu ho-daj.

taneously], Jam-ki-ja mem-ki-hō- *Make fire*, Ši-to-nād-taj.

hi. *It is cold*, Niš-iš-chi-jōb.

What is your name? [Como te *He drinks water*, Neš-iš-to-nōm tsū-
llames], He-sap so-po-tōz? di.

Come to eat, Baj-to-hōk. *I live here*, A-ne-kid or-ki-jo.

<i>I am eating, An-te-wa to-hök.</i>	<i>I want to marry, Niš-ta-hön-tam.</i>
<i>Give me, O-maj.</i>	<i>Somebody is dying [Se muere otro],</i>
<i>He has malaria, Šiš-tön iš-to-hök-</i>	<i>Te-a-po-mo gu-maj.</i>
<i>da.</i>	<i>I want to sleep, Niš-iš-hö-šim kō-</i>
<i>Juan has much money, Juan muy vi-</i>	<i>šam.</i>
<i>ja vaj-no.</i>	<i>I want you much, A-ne-ni-šim hō-</i>
<i>That man has much money, Muy vi-</i>	<i>chi.</i>
<i>ja vaj-num ti-ön.</i>	<i>I am a laborer, A-neš-to dād-gi.</i>
<i>Go take a bath, Maj-kvo-to-a-tě-po.</i>	<i>Shoot there, A-ni-to-mo-ja.</i>
<i>Give me a stone, O-maj ho-daj.</i>	

VII. SONGS.

A sacred song, of which the Tepecanos would not give a translation, follows :

Hauk ty-tā-vi ka-mi.
 Či-hajn-dū-du ka-mi.
 Hā-va gū-gr te-tu-wa-vo-ta i-po-oj-da-kam.

The following incantation is sung "*al sol y nube*" (to the sun and cloud) at the commencement of the rainy season. It is usually much longer than given here (with variations and repetitions it may last, I was told, upward of two hours), but the construction is similar throughout, the first verse being repeated with each successive stanza. Owing to their imperfect Spanish, the Tepecanos were not able to give me a literal translation of the song, but apparently it is mainly a rejoicing at the coming of the rains on which depends the whole sustenance of the people.

Hā-va-ū¹ tu-tā-vi ka-ma ši-hajn-dū
 Ū te-a-ta wē-ve u-tu-tā-ve
 Hā-va g-t-waŋ-gi [the heavens] oj-da-kam [the earth].

Hā-va-ū tu-tā-vi ka-ma ši-hajn-dū
 Hā-va um-ā-rañ-ghim
 Hā-va te-vāg um-tū-tuñ-ghim.

Hā-va-ū tu-tā-vi ka-ma ši-hajn-dū
 Hā-va t-wāg hp-tg-wa [the lightning].

¹ *Hā-va* may be an adaptation from the Spanish *agua*, although the present Tepecanos believe it to be a word of their own language.

Hā-va-ū tu-tā-vi ka-ma ši-hajn-dū
Hā-va vp-gū-ve.

Hā-va-ū tu-tā-vi ka-ma ši-hajn-dū
Hā-va ne-ō-ki-him [the thunder].

Hā-va-ū tu-tā-vi ka-ma ši-hajn-dū
Hā-va bi-wah wa-ū-ta.¹

Another incantation of the Tepecanos, also sung before or at the beginning of the rainy season, and given to me by another man, is as follows :

Hā-va tā-ta hā-li ō-li
ka-ma ši-hajn-dū, dū-ka-ma.
Hā-va g-tu-wan-gi
u-tāfi-a-vi, ojn-da-ka-ma.
Hā-va tu-va-gi u-tā
hā-vi o-in-da-ka-ma.

The idiom, as will easily be seen on comparison, although related particularly to the Tepehuane, and also to the Pima and the Nahua, presents numerous differences from each of the latter tongues. This fact would seem to indicate either an admixture of distinct languages or a long separation of people originally speaking the same dialect.

EXPLORATIONS IN OTHER PARTS OF NORTHERN JALISCO AND IN ZACATECAS

Tlaxcaltecos. — East of the Tepecanos are the rough mesas and barrancas of the district of Colotlan, and here in many spots are found traces of an ancient population. After almost a whole day of difficult journeying toward the east and slightly south from Askeltan one reaches a group of Indian pueblos known as Temastian, Azcapotzalco (about three miles east-southeast of Temastian), and Santa Rita (about seven miles nearly south of Azcapotzalco). One or two of these settlements are probably ancient, but as I learned from carefully preserved records, they were all peopled, in the early part of the eighteenth century, by Tlaxcaltecs, who were introduced by the Spaniards for defense against the "Chichimecos." Thus, in

¹ "The water will now come from the sky."

the three villages there are examples, persisting with their introduced population to this day, of the *pueblos fronterizos*, which played such an important part in the pacification of the country. Judging from their physical characteristics, the present inhabitants of the three villages are no longer pure Tlaxcaltecs, but the result of a union of these and some of the "Chichimecs." Nor do any of them now speak the old "Mexicano." There exist considerable friendship and even physical likeness between the natives of Temastlan and the Tepecanos.

Ruin Orcón. — About six leagues southwest from Azcapotzalco, in a barranca, there is, according to the natives, a large ruined pueblo named Orcón, or Cerro de Orcón, similar in character to the ruins north of Askeltan, with petroglyphs, *pidras labradas*, etc. The inhabitants of Azcapotzalco, which is an old settlement, believe that Orcón was the original seat of those who founded their own pueblo.

Ruin Momax. — Seven miles east-southeast of Santa Rita is a comparatively large and now Mexicanized town called Atolinga; and four and a half leagues from here, in the broad valley that bears its name, lies the large old Mexican town of Tlaltenango. About five leagues north of the latter and nearly midway between it and Colotlan is an ancient ruin called Momax. The licenciado Romanes in Tlaltenango informed me that the ranchman on whose property the otherwise not pretentious ruin is situated, needing some stone, destroyed a mound and found in it many burned and also some unburned human bones, together with various art objects, among which was some good pottery. Sr Romanes preserved one of the skulls, which I was able to measure, and he also kept a few damaged pieces of the pottery, one of which I obtained for the American Museum. The pottery exhibits different forms, but has the same artistic paint-inlaid decoration as the best pottery from Totoate, and even somewhat similar figures.

Natives of the Valley of Tlaltenango. — At Tlaltenango, and especially throughout the valley south of it, the proportion of Indian blood increases, and there are ranches and even pueblos where not a few apparently pure-bloods can still be found. These natives are probably largely the descendants of introduced Tlaxcaltecs, for

their facial and body type approach closely that common in Tlaxcala and in the valley of Mexico. A large and almost wholly native pueblo, of known origin, called San Pedro, lies in one of the tributary valleys to the east of that of Tlaltenango, about half a day's journey from Tlaltenango itself. I shall later recur to this village.

*Teul.*¹—A little less than a day's horseback journey south-southwest from Tlaltenango lies the famous ancient settlement, religious center, and fortress of Teul, once the most important seat of the "Teul-Chichimecs." Just north of Teul itself are several old native villages, the inhabitants of which show not a little mixture. What is known as Teul today is a fair-sized Mexican town at the foot of the ancient settlement, which was situated on a high, isolated hill, scalable only with difficulty, just south of the present Teul. The hill consists of a base of steep and in places vertical walls; a broad, inclining, circular bank of land, trending eastward, on which is found a spring and a cave-reservoir of water; and a large, conical elevation somewhat west of the middle. On the northern, eastern, and southern quarters of the belt-land are the remains of ancient Teul. These consist of mounds and large ruins with *patios*, as well as smaller ruins, all built of stone and in practically the same manner as the ruined structures of the Totoate group. The surface is everywhere overgrown and partly hidden by rank vegetation. The total area or mass of the ruin is not so great as one might expect from the notoriety of the place — it is smaller, for instance, than the ruins at the Banco de las Casas, south of Totoate — but there is no knowledge as to how much of Teul lay at the base of the hill, nor of how much has been obliterated by time and through the Mexicans. Enough remains, however, to deserve thorough exploration, for the largest mounds and structures have hardly yet been disturbed and appear to give promise of fruitful results to the archeologist.

The soil about the ruins is rich in fragments of mostly crude, but also some rather nicely painted or incised pottery, and in chips of obsidian and other stones. A quite extensive part of the belt is cultivated. Human bones are found occasionally, but thus far none has reached any museum. I saw dug from the bank a

¹ See Mota Padilla, *Historia de la Conquista*, p. 57.

mesocephalic cranium, rather small, and in general of strong texture.

Among the few specimens which I obtained at Teul are the head of a small stone idol with a flat face and a small axe with an animal head carved in profile on the butt. The latter corresponds exactly with the axes from the Totoate group, as well as with the two from La Quemada, recently made known by Batres,¹ that have human or animal designs on the blunt end.

Living Remnants of the "Teul-Chichimecs." — While at Teul I learned that two old villages of full-blood Indians were situated about six leagues west of Teul, and between the latter and the barranca of the Rio de Bolaños. These are San Lucas, or, as it is known to its inhabitants, Tepetitlan, and Tepisoac or Tepisoake. San Lucas, which lies about two leagues south of Tepetitlan, is probably the pueblo that Mota Padilla (page 58) speaks of as having been founded in 1530 by Oñate, and in all probability was peopled by some of the inhabitants of Teul after the reduction of the latter place. At all events there is a tradition among the natives of Tepetitlan that their ancestors inhabited the Teul district before the whites came, and I found nothing to controvert this belief. The introduced Tlaxcaltecs and their "*pueblos fronterizos*" were situated a day's journey to the north.

On reaching Tepetitlan, which lies in a pleasant and fertile depression in the highlands, I found it entirely deserted. It is a village of moderate size, with the houses mostly scattered. The dwellings, which are of stone, or of stone and adobe combined, are all quadrilateral, with gable-shaped *zacate* roofs — a type of structure common throughout the entire region. The absence of the inhabitants was partly due to the corn harvest, but mainly, as we found later, to the suspicion that I might be a government agent coming as the result of a recent revolutionary plot. Fortunately I had with me a man (the owner of the Teul hill) in whom the Indians had more confidence than they usually have in white men, so that eventually a few were induced to return, while others were sought and measured in the cornfields. I include in full the measurements of five full-grown men, from which it will

¹ *Visita a los monumentos arqueológicos de La Quemada.*

be seen that these Indians are of small stature, often with relatively broad head and face, and a quite broad and short nose, in all of which, as well as in general physical appearance, they closely approach the Tepecanos (plate XLIV, 1-3).

Measurements of Men at San Lucas (Tepetitlan)

Approximate age.	30	55	35	65	42
Height (cm.).	156.0	158.5	161.9	165.5	165.9
Head, diameter ant. -					
post. max.	17.0	18.3	18.7	18.35	19.5
Head, diameter lat. max.	14.6	14.6	15.1	15.2	15.2
Cephalic index.	85.9	79.8	80.75	82.83	78.0
Height of head from					
biauricular line.	13.1	12.8	13.5	12.8	13.55
Face, chin-nasion.	10.6	10.9	11.8	12.2	11.8
Face, chin-crinion.	17.3	17.5	18.8	17.1	17.0
Diam. bizygom-max.	14.0	14.25	13.4	13.6	14.5
Diam. frontal min.	9.9	10.2	10.1	10.1	10.7
Diam. bigonial.	9.8	10.4	10.1	10.1	11.0
Nose, height to nasion.	4.55	4.75	5.2	5.2	4.9
Nose, breadth max.	3.75	4.25	3.9	4.25	4.25
Nasal index. ¹	82.4	89.47	75.0	81.7	86.7
Mouth, breadth.	6.0	5.8	5.7	5.9	6.0
Hand, length.	16.8	18.2	17.3	18.1	17.8
Hand, breadth.	8.1	8.2	7.8	8.0	8.2
Foot, length max.	22.8	25.6	23.6	25.4	25.2
Foot, breadth max.	9.9	9.5	9.0	9.3	10.0

Tepisoake, having been reported to be also deserted, was not visited; but from what I could learn the two pueblos differ in nothing material. The only occupation of the natives of both is agriculture. All now speak Spanish, and even the old men could or would not inform me of any one who remembered any of the original language. The Indian name Tepetitlan is Nahuatl, as are practically all the native names in northern Jalisco and southern Zacatecas. Of *Tepisoake* I have not found the derivation.

Other Probable Remnants of the "Chichimecos." — In a shallow valley about five leagues northeast of Teul and a little more

¹ Average nasal index of Tepecanos = 83.6.

than that distance southeast of Tlaltenango, near the foot of the Cerro Chino, lie two larger and still almost wholly native pueblos, known as San Miguel and San Pedro. Both were among the settlements founded by Oñate in 1530.¹ San Pedro is the larger village, numbering over a hundred men.² The principal occupation of the inhabitants of both settlements is agriculture. The dwellings are similar to those at Tepetitlan; the mode of life of the people is the same throughout the region among both whites and Indians, and is as above described. The only language current today is the Spanish. Some admixture with the whites is apparent and very probably some with the Indians of Tlaltenango valley.

On account of the general disturbance caused by the suppressed revolution previously alluded to, and of the fear arising therefrom, my stay in the San Pedro district was brief. I was able to measure only four full-blood men. It would seem that the San Pedro natives in general are somewhat less brachycephalic than those of Tepetitlan; and both the San Pedro men and women, although the nose is also short and broad, appear generally to be of a somewhat more refined physical type. But there are some physiognomies (plate XLIV, 4) that are very much like those of the natives of Tepetitlan or those of the Tepecanos. The measurements of the four men are as follows:

Measurements of Men at San Pedro

Approximate age.	45	35	40	22
Height (cm.).	163.7	161.7	161.3	159.8
Head, diam. ant.-post. max.	19.0	17.9	18.2	18.3
Head, diam. lateral max.	15.1	14.0	14.6	14.8
Cephalic index	79.5	78.2	80.22	80.87
Height of head from biauricular line.	13.3	12.9	13.15	13.05
Face, height to nasion.	11.5	10.5	11.6	11.0
Face, height to crinion.	17.5	16.3	17.2	17.2
Face, diam. bizygom. max.	14.4	13.2	13.8	14.1
Face, diam. frontal minim.	10.4	9.4	10.2	9.6
Face, diam. bigonial.	10.4	10.0	9.8	10.4

¹ Mota Padilla, *Historia*, p. 58.

² The local custom of giving the population of a place is to give the number of male adults.



NATIVES OF TEPETITLAN AND SAN PEDRO

Figs. 1, 2, 3. Natives of Tepetitlan, District of Teul; Fig. 4. Natives of San Pedro, District of Tlaltenango.



Nose, height to nasion.	5.1	4.5	4.85	4.6
Nose, breadth.	4.35	4.25	4.15	3.85
Nasal index.	85.3	94.4	85.6	83.7
Mouth, breadth.	6.5	6.2	5.8	5.9

Cerro Chino and Neighborhood. — The high mountain known as Cerro Chino, which is on the road from Teul to Mixton, is a prominent landmark, being visible, except from the east, from almost every elevation from a little south of Jerez to below Teul. With Mixton it forms a part of the long and rather narrow ridge that separates the Tlaltenango from the Juchipila valley. About its base are often found stone implements, particularly arrow and spear points, as well as decorated clay whorls, potsherds, etc. The mountain itself and the level parts of the ridge seem to be devoid of extensive ruins, but I learned of the remnants of many stone *fincas* in a fold of the ridge, some distance to the eastward of Cerro Chino, probably in the slope of the Juchipila valley.

Mixton. — My next visit was to the famous Cerro de Mixton, half a day's journey to the northeast of Cerro Chino, the last stand of the united natives against the invading Spaniards in 1541. The mountain is easily accessible from the land side and is not imposing. It covers a part of the flat surface of the ridge, with a moderate conical elevation near the border, bounded on the west and south by a deep barranca, while on the east its usually steep, high walls face the Juchipila valley. So far as I was able to see or learn, there are no suggestions of the reported great conflict that took place here, but the area of the mountain is extensive and I was not able to stop long enough to explore it thoroughly. I returned from Mixton to the Cerro Chino, and, traversing a considerable part of the ridge southward, descended to the Juchipila valley.

Ancient Remains in the Juchipila Valley. — The practically unexplored district south of Juchipila, or Xuchipila, abounds with evidences of an ancient population. About three miles south of Juchipila is an elevation that projects like a wedge northward into the valley. The extremity of this elevation consists of two hills, the more northerly of which bears the peculiar name of Cerro de Chihuahua, while the other is designated Cerro de las Ventanas. Both of these hills, and especially the saddle-like concavity between

them, contain many remnants of ancient habitations. On the north-eastern face of the Cerro de las Ventanas, for about one-third its height from the top, is an almost perpendicular wall, in a large niche at the base of which is found the most interesting part of the ruins, namely, a regular and well-preserved cliff-house. In all probability this is the most southerly cliff-house on the continent. It resembles considerably some of the cliff-houses I have seen in the cañons of Utah, New Mexico, and Arizona, but it has the peculiarity of being painted on the outside. The structure measures a little more than forty feet in length and is about ten feet high. The walls are thick and are well built of selected but unhewn stones, the mortar used having apparently been of mud containing considerable lime and mixed with much broken grass. The ruin consists of but one wall, with no subdivision of the quite small cave behind it. Both faces of this wall are plastered with cement of the same kind as that used in the joints. The outer surface shows six broad vertical stripes that were once white. These stripes, which alternate with others of earth-color, equally broad, are clearly visible from the valley and for some distance toward Juchipila, and it is from their resemblance to windows that the cliff-house bears the designation "Las Ventanas." The four actual openings in the wall are all small, not unlike similar openings in many of the cliff-houses and pueblos in southwestern United States. The lowest of these (door?) openings is nearly two and a half feet high by slightly less than two feet in width. The three higher openings (windows?) are each about a foot and a half by a foot in height and width. The cave itself is empty and barren.

Another cave may be seen in the wall of the hill above the cliff-house, but it is not accessible by ordinary means. There are several other caves in the two hills.

The ruins between and on the hills consist mostly of low stone foundations. There are several small elevations, possibly mounds. The whole settlement was comparatively large. It is possible that these ruins are those of the original "Xuchipila," reduced by Oñate in the sixteenth century.¹

The broad valley south of the Cerro de Chihuahua and that of

¹ Mota Padilla, *Historia*, p. 55.

Las Ventanas are covered with small elevations, and on many of these, for miles southward, are found remains of ancient occupancy. There are ruins on the Mesa de Guaje, near the Rancho de la Cantera, at several points near Pueblo Viejo, rancho Tempiske, etc. At various places in the valley I heard of painted earthenware idols, painted bowls, stone axes, shell objects, etc., as having been found accidentally or by treasure-seekers, but most of these objects were, as usual, broken and the rest dispersed. All that I was able to recover from the people of the valley are a single small bowl, much like some of the painted bowls from Totoate, and two interesting clay figures which remind one of similar objects from southern Jalisco and Tepic. One of these figures shows a series of nose-rings in place.

During my inquiries I was repeatedly informed of bone caves and bone discoveries near the Pueblo Viejo, above mentioned, which is a moderate sized village of mixed-blood Mexicans, a little more than ten miles south of Juchipila. On visiting this locality I found some ruins and caves, but all had been despoiled. Engaging some of the natives, I excavated at several places, and during the few days at my disposal found several old burials which yielded seven valuable skulls, as well as a few choice art objects including an onyx ceremonial axe, several copper nose-rings, and some decorated shell ornaments. The most interesting object recovered, however, is a piece of a human skull with two, apparently post-mortem, artificial perforations (plate XLI, 13). It was in this village that I purchased the little bowl, dug out in a field some months before, that so much resembles the painted pottery from Totoate, although the two places are separated by a distance of about one hundred miles. In general character the ruins themselves are much alike in the two localities.

North of Juchipila ruins seem to be more rare, but I had only limited opportunities for personal exploration, and the ignorant natives can not be trusted. Between the ranches of Cofradia and the large artificial lake south of it, near the road from Juchipila to Jalpa, I found a large, apparently ancient, regular, quadrilateral mound about two and a half feet high. This promising "*mogote*" has not yet been disturbed.

From Jalpa to Tabasco¹ the country is more sparsely populated, and I obtained no information or actual knowledge of value as to its archeology.

The Juchipila valley up to Tabasco is mostly inhabited by a mixed population, which in some localities approaches more the white, in others the Indian type. Among the more Indian physiognomies there is a general resemblance to those of Tepetitlan and San Pedro, and the skulls from near Pueblo Viejo show apparently the same type of people.

From Tabasco, continuing northward, the road leads toward Villa Nueva and the valley of La Quemada. This valley is separated from that of Juchipila by a low mountain ridge, on the southern slope of which are the ruins of another quite large ancient pueblo. There are many low stone foundations, many mounds or *mogotes* of stone or earth, and some walls or remnants of walls that probably once served for retaining the water and the soil. The whole ruin has thus far been left untouched by despoilers. The site of the ruin is known among the *arrieros* as Guayavo. Other ruins probably exist in the mountains to the northeast and west of this place.

LA QUEMADA

This great ruin, favored by its situation near Zacatecas, as well as through reference to it by early historical writers, such as Torquemada, Tello, and later Frejes, has received a fair amount of scientific attention, yet thorough exploration is still desirable. The best description and plans of the ruin are those of M. Guillemin-Tarayre, published in 1869.² The included plan by C. de Berghes is particularly valuable on account of its detail, which shows the ancient roads and many of the smaller habitations now difficult of location. During the present year L. Batres published a monograph on La Quemada³ with some good photographic illustrations but very little new descriptive matter. Other accounts of the ruin have been published by Gutierrez, Lyon, Esparza (Rivera's account), Burkart, and Nebel.⁴ In the light of these studies, my own observations can

¹ "Mecatbasco" in Mota Padilla, *Historia*, p. 56.

² *Archives de la Commission Scientifique du Mexique*, vol. III.

³ *Visita a los monumentos arqueológicos de La Quemada*, Mexico, 1903.

⁴ See Bancroft, *Native Races*, IV, 578-592.

convey but little that is new or of special value except that they may in a general way give indication of the character of the ruin as it exists today and point to certain important resemblances between it and the Totoate group as well as other ruins herein mentioned.

The Spanish name *La Quemada* signifies "the burnt (one)," but there is nothing now visible which justifies the name. If signs of fire in the structure existed when the Spaniards first saw it, they have disappeared, at least from the surface. Apparently Bancroft¹ is entirely correct in his opinion that "the name Quemada, 'burnt,' is that of a neighboring hacienda" and that "there is no evidence that it has any connection with the ruins," the local name of which is "Los Edificios." Yet the ruin is so generally known by the name *La Quemada* that the term has been retained in this paper.

The ruin is situated on a low, isolated mountain with three summits, a little south of the middle of the narrow valley which extends from the base of the mountains of the city of Zacatecas to some leagues below Villa Nueva. The mountain or hill of *La Quemada* is nearly thirty miles by road from Zacatecas, twelve miles north of Villa Nueva, and nearly four miles north of the Hacienda de la Quemada. From the highest point of the Cerro de los Edificios it is possible to view almost the entire valley as well as the slopes of the sierras that bound it laterally.

The ruin itself is unquestionably a remnant of the most remarkable ancient structure north of the Rio Santiago. In compactness and plan, in structural quality, and especially in differentiation of purpose, it exceeds not only the more northern Casas Grandes of Chihuahua or Zape in Durango, but also the celebrated Tula in the south. It represents a vast amount of labor and must have occupied, even with swarms of workmen, many decades in its construction; yet the entire structure seems to show unity of plan and continuity of execution. The ruin exhibits evidence of considerable age, but notwithstanding this and some recent spoliation, such as the removal of building stones for fences, it is still remarkably well preserved and is well worthy of further archeological study.

La Quemada is not the ruin of an ordinary town, although it contained some inhabitants. It was plainly a defensive structure,

¹ *Native Races*, IV, 579-580.

and unquestionably is the most elaborate ancient fortification in northern Mexico; at the same time it probably served as a theocratic center.

The ruin consists of: (1) Some outlying structures and terraces on the south. (2) A great temple and courtyard on an artificial (or at least partly artificial) high stone terrace that runs from the main ruin hill eastward. (3) A main pyramid, built on an artificial stone terrace on the east of the main ruin hill, a little northward from the temple. (4) The main ruin hill structures, built on several more or less artificial stone terraces. (5) Two structures between the main ruin and the more southwesterly hill. (6) A structure on the summit of the southwestern hill. (7) A structure in the depression between the northwestern and the northern hill. (8) Fortifications. (9) Connecting avenues and diverging roads.

1. The outlying part of the ruin consists of a pyramidal stone structure, now crumbling; a large, low flat terrace; a single straight row of ruined houses extending toward the base of the main ruin hill; and a broad, elevated avenue, paved with slabs laid flat, extending from the low terrace to that on which stands the temple. On the lower part of the southwestern slope of the main ruin hill are several regular, terraced rows of ruined dwellings which connect with the other outlying structures by the single row of houses above referred to.

2. The temple is nearly square. The walls, which are built of selected flat stones of medium size, still reach a maximum height of ten feet and are five to eight feet in thickness. Within the temple are eleven, mostly well preserved, perfectly cylindrical pillars, about five feet in diameter, built of selected smaller flat stones, laid in adobe-like mortar (now largely washed out) and reaching approximately the same height as the walls. The temple opens into a large, stone-filled court. The walls of the latter structure are lower than those of the temple; they are also not so thick and are not so well preserved. The row of columns that M. Tarayre mentions as having existed here have disappeared. One particular feature which I encountered in the court is some stone cysts, exactly like those found nearly seventy miles distant in the "temple" at the Banco de las Casas ruin in Jalisco. Near where

apparently the entrance to the temple courtyard was situated, and just at the proximal end of the paved avenue leading from the outlying structures to the temple, is a small, conical mound of stone. On and about this mound, and between the stones composing it, I found a number of fragments of pottery, among which were several with the paint-inlaid variety of decoration such as I recovered from Totoate and as was found at Momax, north of Tlaltenango.¹

3. The great pyramid stands quite isolated in a large, quadrilateral, court-like space which opens eastward. The structure was apparently connected with the temple by an avenue or plaza. The stones from which it is built and the manner of building are similar to those of the walls throughout the ruin. It still stands about thirty-five feet in height on a wider stone terrace from six to twelve feet high. The pyramid is quadrilateral, each side measuring sixteen meters at the base,² with diameter gradually diminishing toward the summit, which is blunt and partly destroyed. The sides of the structure are oriented, although not perfectly. The walls are cracked and otherwise damaged, and only a mild earthquake, fortunately rare in this region, would perhaps suffice to demolish it. At the base of the main ruin hill and nearly in line with the pyramid is a cave of moderate size, the floor of which is paved with flat stones while the walls are blackened by smoke.

At some distance from the pyramid and cave there are some small scattered ruins, and the earth is sparsely mixed with small sherds of crude as well as of a better quality of painted earthenware. A stone flake may be found now and then. The whole place is thickly overgrown with *tuña*, making a full view of the lower structures very difficult.

4. The main ruin hill presents three large, more or less artificial, stone-built terraces which are barely accessible. Each of these terraces contains ruins of dwellings as well as of structures that probably served for ceremonial purposes and for assembly.

¹ It is probable that some of the potsherds have been brought to the surface by rodents. The owner of the Hacienda de la Quemada has in his collection two or three imperfect pieces of this paint-inlaid pottery and several pieces, also imperfect, of painted ware exceedingly like the Totoate variety, all obtained from or near the ruins of La Quemada. Some of the pieces, as well as additional specimens, are illustrated in plates 18, 22, and 23 of Batres' report, *op. cit.*

² According to Tarayre. Batres' measurements give 16 to 18.2 meters.

Throughout the terraces the quadrilateral form of construction prevails. In one spot only, on the middle terrace, may an exception be noted in a circular, kiva-like outline in the middle of one part of the ruin. The walls are always thick and are built throughout, in the same manner, of not very large, selected, more or less flat stones, the exposed face of many of which has undoubtedly been roughly fashioned, but in no case nicely hewn or rubbed down. It is probable that the stones were laid in some sort of adobe mortar, as mentioned by Tarayre and others, but if so it has weathered away. The terraces, which must have cost an immense amount of labor, are in regular but steep slopes, and are built in nearly the same manner as the walls of the various other structures.

The character of the terraces and walls is much like that of the ruins of the Totoate group and of those in southern Zacatecas, but the proportion of masonry in La Quemada is incomparably greater than that of any other ruin group. The construction in La Quemada reminds one also of that of the ruined stone-built pueblos in New Mexico and Arizona, although there are some pronounced differences between the former and the pueblo ruins of the north.

On the eastern portion of the first terrace is a ruin of a structure that consisted of a number of rooms of medium size. Farther westward are other ruins in poor condition. The middle terrace, apparently the most important one, shows high, fairly well preserved walls of large buildings which originally must have been at least two stories high. There is also a quadrilateral court, near the northern side of which is a small, flat-topped, stone-built, terraced pyramid, about ten feet high. The third terrace contains smaller ruins. On the southern slope of this part of the three-peaked mountain are, as mentioned before, five or six rows of ruined dwellings on low terraces. The very top of the main ruin hill is barren.

5. In the shallow saddle between the mountain last mentioned and the southwestern part is the ruin of a massive quadrilateral structure, and near this is the remnant of a stone terrace.¹

6. The summit of the southwestern hill contains the ruin of a large stone house that must have been of more than one story and which contained several rooms. There is also near this house a pyramidal stone mound.

¹ See Tarayre's plan in his plate v or in Batres' report.

7. From the ruin just mentioned an avenue, not indicated on Tarayre's plan, slightly terraced and paved, leads downward toward the northern part of the mountain. Just at the base of this part is found, on a high terrace, 'the well-preserved ruin of another building of moderate size. Slightly behind this building is a regular space and some low ruins.

8. The entire northwestern hill and the whole of the northern hill are surrounded by a well-built defensive stone wall, ten feet broad (and even broader at the northwest), and in places from ten to twelve feet high. Formerly, according to Tarayre's plan, a similar wall extended also along the northern side of the southwestern hill, but today only traces of this remain. Some rude breastworks are intact on the western slope of the main ruin hill, commanding the saddle between this and that on the west; and there are various other structures which probably served as fortifications. Wherever the walls or fortifications end, the mountain presents either steep or totally inaccessible sides, or the bulwarks of the stone-built terraces. Altogether there rises before the visitor an imposing, massive, walled fortress of stone, not unlike some of the feudal strongholds of mediæval Europe.

9. Besides the avenue leading from the outlying works to the temple, that from the temple to the great pyramid (now traceable only with difficulty), and that leading from the ruin on the top of the southwestern hill to the one at the base of the northern part of the mountain, there can be made out, especially after the first rains of the wet season, owing to the difference in the color of the earth and other signs, several roads radiating from La Quemada in various directions. On occasions, I was informed, these roads can be traced for considerable distances.¹

Nowhere in or about La Quemada have I found petroglyphs² or worked slabs of stone, such as are common at Totoate. Potsherds and stone flakes may be found almost everywhere about the ruin, but they are in no place abundant and at many points are scarce. Aside from the fragments of pottery above mentioned a day's search resulted in no important find.

¹ See Berghe's plan in Tarayre's report.

² Tarayre (and also Batres, plate 24) mentions and pictures the face of a rock in the neighborhood with several upright serpent figures, and by other authors a slab with carved hand and foot is spoken of.

With La Quemada the stone ruins of southern Zacatecas and the neighboring region practically end. It appears as if this structure was built through the combined efforts of a great people living farther southward and possibly including the entire population of the valley of Juchipila, Tlaltenango, and Rio de Bolaños, as a protection against northern invaders. The great ruined fort and *teocalli* can not be separated culturally from those to the south and southwest of it. The inlaid and painted pottery, the ceremonial axes, some of the idols, the ordinary axes (pictured by Batres), the peculiar stone cysts near the temple, the form of the stone structures, all connect it more immediately with Totoate, Momax, Teul, and other ruins referred to in this paper, than with those of any other region. There is some resemblance in type between the ruins of La Quemada and those at Zape and its vicinity (there are small stone ruins as far as Santa Catarina de los Tepehuanes), but from Zape to La Quemada, without any known connecting link in the way of ruins, there lies a stretch of nearly three hundred miles. There is also typical relation with more southerly ruins, but the first attention is claimed by those in the vicinity.

I trust that this account, superficial and imperfect as it necessarily is, will stimulate further and more extended research in the country of the "Chichimecs," a country hitherto supposed to be barren. As to the physical anthropology of this part of northern Mexico I shall have something more definite to present when the elaboration of my somatological material is completed.

In conclusion I feel obliged to refer, in a few words more, to the treasure-hunters in Mexico. There is no law to restrain such people, yet they destroy each year more ancient remains of every description than do the elements and all other sources combined. Wherever I searched for osteological or other remains of the ancient people, I encountered traces of this vandalism. As spoliation is here very largely due to ignorance, the Mexican civil authorities, men of science, clericals, and newspapers could do much good to local archeology by inspiring a proper regard for these interesting monuments and for the objects connected with them.

PREHISTORIC PORTO RICAN PICTOGRAPHS

By J. WALTER FEWKES

INTRODUCTION

Not the least significant of the many survivals of a prehistoric race in the West Indies are rude pictures cut in rocks and called pictographs or petroglyphs.¹ A study of their forms, geographical distribution, and meaning is an important aid to our knowledge of the origin and development of Antillean culture; it affords valuable data bearing on the migration of the race and points the way back to its ancestral or continental home.

Although there exists considerable literature on the pictography of the Lesser Antilles, the Bahamas, Jamaica,² and Porto Rico, little has yet been published on that of Cuba and Santo Domingo. Both of the latter islands were thickly settled at the time of their discovery, and we should expect to find in them many pictographic evidences of prehistoric occupancy.³ Undoubtedly continued research will make them known to anthropologists.

The most important contribution to the pictography of Porto Rico is by A. L. Pinart,⁴ whose pamphlet, although rare, is accessi-

¹ Mallery (1893) restricts the term "petroglyph" to productions where the picture "is upon a rock either *in situ* or sufficiently large for inference that the picture was imposed upon it where it was found." Following this restriction the majority of pictures here considered would be called "petroglyphs"; but as this article contains other forms, I retain the older term "pictograph" for both kinds.

² J. E. Duerden, "Aboriginal Indian Remains in Jamaica," *Journal of the Institute of Jamaica*, vol. III, No. 4.

³ While in the Dominican Republic I heard of several pictographs, among others a cluster on the shore of Lake Henriquillo, but I did not inspect them. According to H. Ling Roth ("The Aborigines of Hispaniola," *Journ. Anthropological Institute*, vol. XVI, p. 264), "Descourtilz also (*Voyage d'un Naturaliste*, Paris, 1809, vol. II, pp. 18-19) says rock carvings of grotesque figures are to be found in the caves of Dubeda Gonalves, in those of Mont S  lle, near Port-au-Prince, and in the Quartier du Don  on near Cap Fran  ois (Cape Haitien)."

⁴ *Note sur les P  troglyphes et Antiquit  s des Grandes et Petites Antilles*, Paris, 1890. Folio facsimile of MS.

ble in part through extracts published by Mallery.¹ The former authority spent some time in Porto Rico and was the first to point out the wealth of pictographic material on the island. I have seen many of the pictographs described by him, and have independently rediscovered several others which he mentions. His pamphlet is an important contribution, although on account of its rarity it has been overlooked by some of our foremost students.

Among other important contributions to our knowledge of Porto Rican pictography may be mentioned the small pamphlets by Dumont and Krüg,² both of whom practically consider the same specimens, having apparently derived their knowledge not from personal inspection but from a manuscript preserved in San Juan. The pictographs which they describe, and of which Krüg gives a full-page plate, are said to be on a rock called *Piedra de la Campana* ("Bell stone"),³ poised on two upright rocks in the middle of the Rio Grande de Loisa, not far from the town of Gurabo.

A perusal of these publications induced me to visit Gurabo, and although I was not able to find these pictographs, I was rewarded by the sight of a boulder, also poised on two upright rocks, situated in the Loisa river half-way between Caguas and Gurabo. This stone, locally known as the *Cabeza de los Indios* ("Head of the Indians"), was found to bear several rude incised figures which were too illegible to be identified.

A recent addition to our knowledge of Porto Rican pictography is a brief article by O. W. Barrett in the *Popular Science News*.

¹ "Picture-writing of the American Indians," *Tenth Annual Report of the Bureau of Ethnology*, p. 136, 1893. Since writing the above lines I have received a copy of this work, which is particularly important as pointing out localities in Porto Rico in which pictographs occur. Pinart mentions these figures from the following places: In the caves of Bonilla, Conejos, and Islote, near Arecibo; Arcillos and Planados, near Ciales, and Malloquin, at Cabo Rojo. He refers to river pictographs near the mouth of the Cano del Indio at Ceiba, at the junction of the Rio Ceiba and Rio Blanco, and at the Loma Muñoz, above Rio Arriba, in the Fajado district. The *piedra pintada*, or painted rock, said to be situated on the road from Cayey to Aibonita, and the rock with pictographs on Don Pedro Farez's farm near Carolina, are possibly "pillar stones." Pinart's illustrations are too imperfect to aid the student in identifications.

² L. Krüg: "Indianische Alterthümer in Porto Rico," *Zeitschrift für Ethnologie*, Berlin, 1876. Dr D. Enrique Dumont, *Investigaciones acerca de las Antiquedades de la Isla de Puerto Rico (Borinquen)*, Habana, 1876.

³ Said to have been used as a bell to call the natives together.

There are also scattered references to the subject in popular books on the island which have appeared since the American occupancy; these have a value in pointing out otherwise unknown localities in which pictographs may be found. Porto Rico apparently has a larger number of these rock pictures than one would at first suspect, but in a short article I cannot hope to do more than to call attention to a few typical forms.¹

CLASSIFICATION OF PORTO RICAN PICTOGRAPHY

In a general way Porto Rican pictographs fall under the following heads¹ with reference to the localities in which they are found: (1) River pictographs, (2) cave pictographs, and (3) pictographs on the boundary stones of enclosures identified as dance plazas. Of these the first group contains perhaps the best specimens of stone cutting, but those of the third class are in many instances very finely executed. The river pictographs are commonly found in isolated valleys of the high mountains, and, as a rule, are cut on hard rocks the surface of which has been worn smooth by the water — two factors quite favorable to good technique. The caves of the island are confined to a soft, calcareous formation, the surface of which is never very hard and is seldom smooth. The pictographs in these localities, while more easily cut than those on river boulders, are more readily effaced by erosion, and are seldom as finely executed as those of the river type. The pictographs found on rocks surrounding dance plazas are, as a rule, finely made and well preserved. In all three types it would appear that greater care was given by the Antilleans to the technique of pictographic work than by contemporary peoples in North America north of Mexico.

RIVER PICTOGRAPHS

Some of the best specimens of aboriginal Porto Rican pictography were found on boulders in the rivers or in the vicinity of running water. They often occur on rocks which rise out of the

¹ Dr Stahl, who has published the most complete work on the Borinquen or Porto Rican Indians, appears to have overlooked their pictographs.

¹ The claim that the prehistoric Porto Ricans possessed a form of hieroglyphic writing has not been substantiated. The "specimens" with these characters upon them are believed to be fictitious.

middle of streams or near waterfalls, so that it is not inappropriate to designate this type as river pictographs, to distinguish them from others found in caves or graven on the rude aligned stones which enclose ancient dance plazas. My studies of the river pictographs were mainly limited to those of the valley of the Rio Grande de Arecibo, one of the large rivers of the island, which rises in the high mountains south of Adjuntas and flows northward into the Atlantic near the town of Arecibo.

There are many evidences that there was formerly a dense Indian population along the fertile banks of the Rio Grande de Arecibo and its tributaries, and many indications that this region will later yield most instructive discoveries to the archeologist. The town of Utuado, which forms an especially good center for archeological work on the island, is situated in the high mountains about due south of Arecibo, on the right bank of the river, being readily accessible by the fine carriage road connecting Arecibo and Ponce. Its surroundings afford some of the most beautiful and picturesque mountain and river scenery on the entire island. Utuado occupies the angle formed by two rivers, one of which penetrates the isolated district of Jayuya (a most instructive region to the archeologist); the other is the main stream along which extends the road to Adjuntas, thence over the high sierras to Ponce. The town is situated in a territory formerly ruled by Guarionex, a cacique who, in the conquest of the island, is said to have led more than a thousand warriors against Sotomayor. We can still trace in the immediate vicinity of the pueblo several large village-sites and plazas where the Indians assembled for ceremonial and other dances, while near by are found some of the finest examples of pictography known in the island.

Among the many collections of pictographs found in the neighborhood of the town of Utuado, one occurs on a river boulder situated at the southeastern corner of the estate of Sr Roig. One can readily find this boulder by following the road from Utuado to Adjuntas, passing the Roig farm-house on the right, and continuing about three miles from the former town. The boulder lies on the right side only a short distance from the road, and is situated conveniently near a dance plaza which will be presently described.

The pictographs, some eight or nine in number (figure 1, plate XLV), cover the entire northern upper face of the boulder on a flat surface about fifteen feet above the base. Their general forms are as follows:

That shown in figure 2 is one of the best of the pictographs on this rock: it is well made and consists of a circular head with two projections or horns on the top, pits for eyes, and an oval mouth connected by a line which extends upward midway between the eyes. The oval body contains a median line with other lines partly effaced, parallel to one another and probably representing arms.

A second pictograph with a horned head (figure 3) resembles, in its general shape, the one last described. It has a circular mouth connected with the outline of the head. The body has a similar medioventral line with horizontal lines suggesting arms. Eyes are represented by small pits. It will be observed that these two pictographs are practically identical in all particulars.

A second kind of pictograph (figure 4), also found on the stone in the middle of the river, consists of two concentric circles in the inner one of which are pits representing the eyes and mouth. It has a mediofrontal line bifurcated at the center of the inner circle, and lines radiating from the outer circle,¹ suggesting a solar emblem.

Figure 5 is directly comparable with the last; but while the latter has the eyes and mouth in the middle of the inner circle, in the former the inner circle contains an elliptical body. On one side this figure has a projection which is indistinct on account of a fracture in the surface of the rock, but, like the preceding pictograph, lines radiate from the outer circle.

An instructive feature of several of these Porto Rican pictographs is the median groove which connects the mouth with the ring-groove bounding the face. This anomalous way of drawing the face reappears in certain South American or Colombian pictographs from Chiriqui,² and in one of the figures ascribed to Dr See-

¹ See the figure with similar radiating lines in Stahl's *Los Indios Borinqueños*, pl. IV, fig. 20.

² For McNeil's sketch of the pictographs see *Sixth Annual Report of the Bureau of Ethnology*, p. 22.

man we find also the added horns. Whether these figures may be rightly interpreted as "cup structures" or not is beyond the function of this article; but the existence of a connecting groove or line from the mouth to the top of the head between the eyes in pictographs from Colombia and Porto Rico is certainly suggestive. It may be added to the many other likenesses between the prehistoric culture of the Antilles and that of the aborigines of the northern countries of South America.

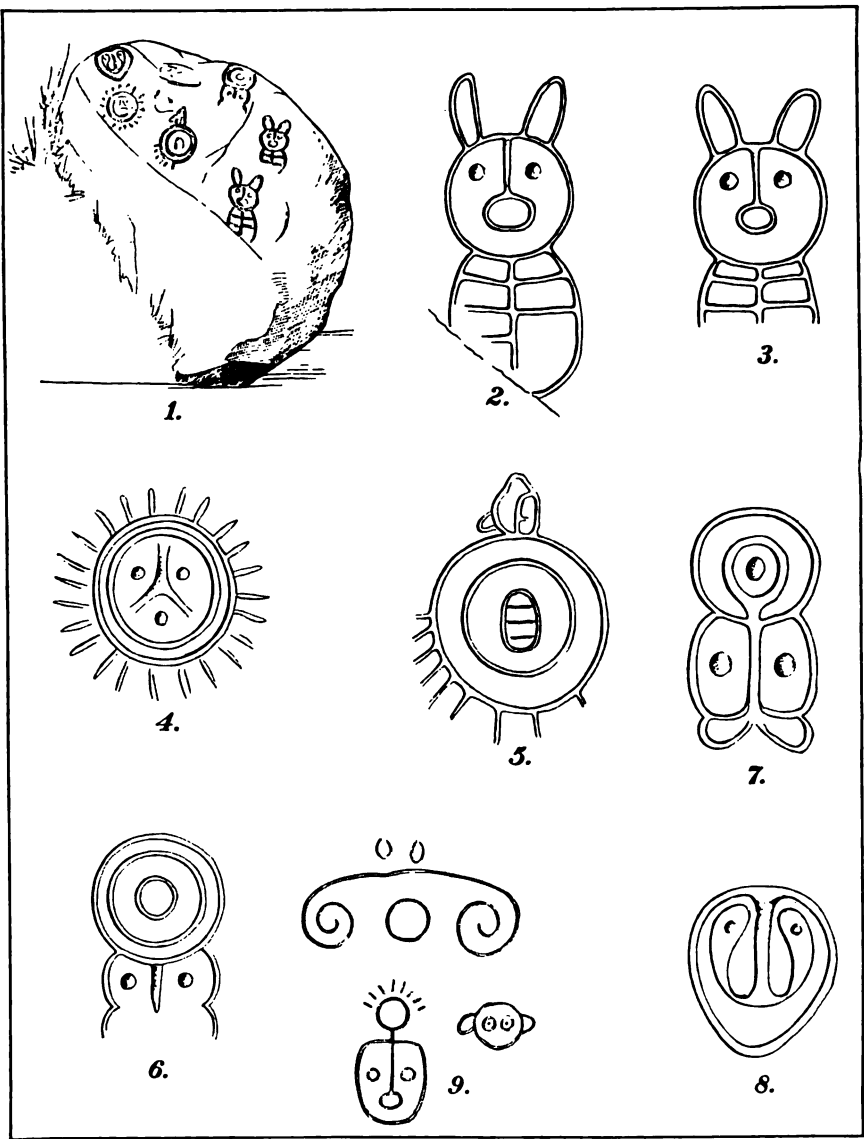
In figure 6 is shown a circular figure resting on another in which we detect eyes as if it were a head, and as though the intention had been to depict a body and a head with a crown or head-ornament. The face shown in figure 7 has eyes and a nose, but no mouth and no representation of the body. It is well made, and although differing somewhat from the others, is apparently not a new type.

Several smaller pictographs are found near those described, but they are so worn that their forms could not be definitely traced. They apparently are circles with enclosed pits, or geometrical figures, one of which suggests the moon.

The circle is a common form of ornament on many different specimens of Antillean handiwork, as pottery, idols, stools, and carved shells. Several mammiform idols which I have collected bear circles cut in low relief or incised on the back or apex. Mason¹ has mentioned the presence of this ornament on pillar-stones, and I am familiar with specimens of those problematic stone rings, popularly called "horse-collars," in the ornamentation of which the circle is also used as a decorative motive.

Perhaps one of the best examples of the use of the circle in ornamentation, and one which to my mind is highly suggestive, occurs on a rare and perhaps unique specimen of Antillean wood carving which I saw in the city of Puerto Plata, in Santo Domingo. This specimen represents a coiled serpent; it was carved from a log of black wood and has a highly polished surface. The details of the head, body, and tail, and especially of the mouth, eyes, and

¹ "The Latimer Collection of Antiquities from Porto Rico in the National Museum at Washington, D. C." *Smithsonian Report*, 1876. Reprinted with pamphlet on Guesde Collection, 1899.



PORTO RICAN RIVER PICTOGRAPHS



scales on the belly, are naturally and remarkably represented. Most significant of the noteworthy carvings on this serpent image are the incised circular figure in the middle of the back of the head and the four similar figures on the body. These circles alternate with triangular markings and other incised lines.

The association of these circles with the serpent idol (for as such we must regard this carving), and the interpretation of the circle as a sun symbol, are a suggestive repetition of a world-wide mythological conception of an esoteric connection of sun and serpent worship. In this individual instance, however, it may be no more than a coincidence. I am much more interested in the fact that the back of the head and body of this wooden serpent effigy is decorated with circles, from a wholly different consideration which can hardly be regarded as a coincidence. The backs of the heads of several mammiform idols have these same circular figures cut with great care; they also sometimes appear on the rear surface of the stone collars which I have identified as the backs of serpents. I believe that these facts, taken with others, reveal the true nature of "ring-stones" and mammiform zemis, to the elaboration of which hypothesis a special paper must be devoted.

The pictograph shown in figure 8 is oval in form with two pits representing the eyes and a median groove between them. Although this is a rare form, it is generally comparable with those previously described.

Two horns on the head of the pictographs recall similar appendages to the heads of figures from the island of Guadeloupe, reproduced in Mason's monograph. The proper interpretation of these appendages is beyond my ability, but attention may here be called to the fact that in stone amulets and in burnt clay figures the Antilleans often represented the fore-legs or arms above the head. In such cases, however, hands, fingers, or claws are commonly indicated, but no sign of these appears in the pictographs.

There is a second collection of well-preserved river pictographs on a rock in the middle of the same stream, higher up than those on Sr Roig's farm, near Sr Salvador Ponz's house. These also are readily accessible from the road, being cut on a boulder in the river just back of the out-houses of the residence. Their situation, how-

ever, is such that good photographs of them are impossible. An examination of these shows that they do not differ greatly from those just figured and described as on the boulder which marks the southeastern corner of the Roig farm. Of these I have made the sketches shown in figure 9, which are repetitions of those already considered, and which likewise occur on the walls of caves, as will later be described. In the upper member there are two spirals facing each other and united. Unlike the other spiral-formed pictographs this figure has a circle between the two terminal spirals. In a lower figure there is a repetition of the human face with its mouth connected by a median groove with the top of the head, and above it a circle with radiating lines recalling solar rays. This upper figure would appear to represent a crown¹ drawn out of perspective, and the radiating lines the feathers which were appended to it.

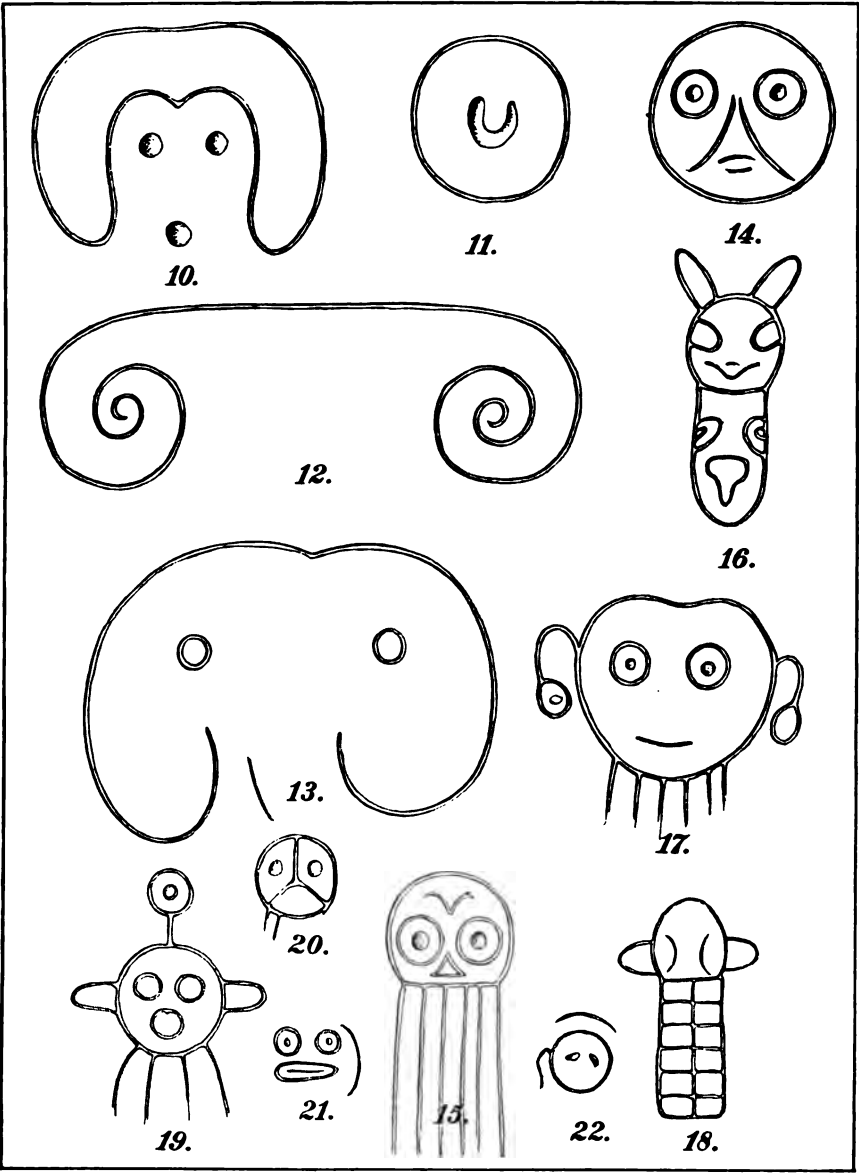
Still ascending the river a few hundred yards beyond the pictographs last recorded, one reaches a beautiful waterfall called El Salto de Merovis, situated about six miles from Utuado, where also is found a collection of river pictographs, but differing somewhat from those described. The river here plunges over high boulders and between immense rocks, resting here and there in deep pools. These smooth, water-worn rocks afford a fitting surface for pictographic work, specimens of which are found scattered over the larger boulders projecting above the falls and the still water of the pools. Several of these pictures are barely legible, others, although easy to trace, from their position are difficult to photograph successfully. The accompanying illustration (plate XLV, 10) shows one of the forms found near the falls.

Another pictograph represents a face, about a foot in diameter, with three pits for the eyes and mouth. There is no representation of a body and no attempt to depict the ears or other appendages to the head.

In figure 11 is a circle in which is contained a crescent suggestive of the moon.

In figure 13 of the same plate is a pictograph of the same gen-

¹ There are frequent references by early writers to crowns with feathers worn by persons of rank, like caciques. Guacanagari gave Columbus one of these objects, which he took to Spain to present to the king and queen.



RIVER AND CAVE PICTOGRAPHS IN PORTO RICO



eral type as that shown in figure 12, with two circles for eyes, and radial lines, apparently representing feathers, projecting from the top.

Figure 17 has a pyriform face with ear-pendants well represented. The eyes are circles with central pupils; the mouth is rudely indicated, and parallel lines descend from the chin. This example, which is one of the best at the falls, is found high on the front of a boulder the slippery sides of which almost forbid climbing.

Figure 12 is a long, almost straight line with a spiral termination at each end. The whole figure measures about a foot and a half, and may be a whirlpool symbol.

Near that last mentioned is a pictograph (figure 14) with eyes, nose, and mouth well represented. Above the latter appear two crescentic marks, facing each other, indicating the cheeks. Among numerous other pictographs on these rocks are two circles, each representing a human face with eyes and mouth clearly indicated.

Several pictographs are found on rocks in the river beyond the falls. One of the largest collections occurs near Adjuntas, and there are others between the falls and Utuado.

Some of the most instructive river pictographs in Porto Rico are found on the eastern end of the island. There are many near Fajado, and others are on the Rio Blanco not far from Naguabo. A short distance from Juncos, near the road from Humacao to that town, there are several river pictographs of the same general character as those described.

My attention has been called to a pictograph which is a profile sketch of a mammiform zemi, or idol, with a conical extension on the back. I have also seen a rock-etching with a body of zigzag form, recalling lightning. The forms which these pictographs take are almost numberless, but in all there is a common likeness to the incised decorations found on wooden and stone stools, idols, and other objects of undoubtedly prehistoric manufacture.

The majority of these clusters of river pictographs, especially those along the Rio Grande de Arecibo, occur in the neighborhood of dance plazas, of which I shall presently speak.

CAVE PICTOGRAPHS

Numerous pictographs are found also in the caves so common in the calcareous rocks of the island. The number of these caverns

in Porto Rico is very great, but not all of them contain Indian pictures on their walls. In many cases they may once have existed, but have been covered up by stalactitic deposits on the walls, and in others may have been erased or destroyed by superficial erosion. As a rule cave pictographs are not cut with the same care as the river pictographs, from which they also differ in size, shape, and apparently in significance. The botryoidal forms taken by many of the stalactites lend themselves to relief carving which is often clearly combined with surface cutting, thus affording intermediate forms between pictographs, or cuttings on flat surfaces, and sculptures. Many of these cave pictographs are found in places not now readily accessible; others occur on slabs of rock which lie on the cave floor.

The Cueva de las Golondrinas ("Cave of the Swallows") near Manati, and El Consejo ("the Council-house") near Arecibo, are typical localities for the study of cave pictography. The former is situated about three miles north of the town of Manati, not far from the ocean. Its entrance is large and open, and it extends only a short distance into the side of the cliff. This cave is about fifty feet wide and deep, and shows evidence of formerly having been somewhat larger. Considerable work was done in this cave by excavation, which was continued for a week with a force of fifteen workmen. I was enabled to clear out the floor, removing from the debris which covered it over two cart-loads of fragments of pottery, among which were many clay heads that formerly served as handles of bowls, and other relief ornaments. There were likewise found polished stone implements, carved shell and bone objects, and other specimens of Indian handiwork.

The walls of this cave were covered with a sticky, greenish black substance which had partially concealed some of the pictographs, but others of large size and good workmanship were quite readily seen. The fallen boulders at the back of the cave also had good pictographs cut upon them. Over ten rock-carvings were counted on the walls and there were others which were undoubtedly obscured by the covering that had become deposited over the walls. The more striking pictographs from this cave are as follows :

One, about eight inches in diameter, cut about breast high on a rock which had fallen from the roof. A slab of stone bearing this picture was cut out, but on account of its great weight it was not brought away.

Figure 15 represents one of the best of all the pictographs in this cave. It measures about eighteen inches in diameter, and was cut on the projecting front of a fallen boulder, making the face very prominent. The body is represented by parallel lines.

Figure 16 represents a pictograph about a foot long, consisting of head and body, with legs appearing one on each side, folded to the body. Like some of the river pictographs near Utuado, it has two horns or anterior appendages, one on each side of the head. This figure recalls the outline of small stone amulets from Porto Rico and Santo Domingo.

The pictograph shown in figure 19 belongs to a type somewhat different from the preceding, but recalls those on the river rock (figure 5) near Utuado. The appendages to the side of the head resemble ears. On the top of the head there is a smaller circle with which it is connected by a groove. Eyes and mouth are represented by three rings.

Figure 18 consists of a rectangular body marked off into squares, with an oval head and ear appendages. There are no indications of eyes, but the cheeks are represented by crescentic grooves.

The three pictures shown in figures 20-22 represent faces, but they have been much eroded and disfigured by time. Originally they were evidently more complicated than their present outline would seem to indicate.

Some fine pictographs are to be seen in the cave called El Consejo,¹ on the estate of Mr Denton, not far from Arecibo. The neighboring hamlet, school, and hacienda bear the name Miraflores. This cave is reached by an hour's ride by coach to Byadera, thence by horse another hour, and by climbing up the mountain to the entrance, which is quite easily accessible. The cave is spacious, roughly dome-shaped, and lighted at the end opposite the entrance by a large arched opening which looks out on the steep mountain

¹ Miss A. B. Gould has kindly given me these interesting notes of her visit to this cave.

side. This opening was in all probability the original Indian entrance, for all the carvings are placed near that end as if to decorate it or to be conspicuously in view as one entered the cave. There are seven faces or heads, all close together and all on one side of the archway. One of these pictographs is especially conspicuous; it is well made, partly in relief, with what appears to be a head, nose, and pointed chin. The other six faces are simpler, consisting of pits arranged in triangles sometimes surrounded by a line to indicate the face. Of these, two faces are cut on rounded protuberances and four are merely incised in the flat rocks. One of these, called by a peon "*el Dios mayor de todos*," had the eyes cut obliquely or sloping from the nose upward. Similar oblique eyes have been noted on many pottery heads, one of the best of which was collected by the author near Santiago de los Caballeros in Santo Domingo.¹

As the name "*el Dios*" implies, there survives in the minds of the Jibaros, or country people of Porto Rico, a belief that these pictographs were intended to represent Indian gods. Of the same import also is the lore concerning caves among these people, which in part at least is a survival of the reverence with which caverns were regarded in aboriginal life. Stories that caves are the abode of spirits are widely current among the unlettered people of Porto Rico and Santo Domingo. According to a superstition which prevails among many of the West Indian islanders, some of these caves are still inhabited; it is said that if objects are placed at their entrance they are removed within a short time by troglodytes, and débris at the cave mouth is said to be swept away in a manner otherwise inexplicable. I was told by a man who owns one of the finest wooden stools in Santo Domingo that he obtained it from a Jibaro who said that while hunting a goat in the mountains he strayed into a cave which had not been entered in modern times. Penetrating an inner chamber he saw in the dim light what he supposed to be one of these cave-dwellers. He struck at it with his machete and fled, but later returned to find that the object of his fear was a wooden stool which he removed and later sold. As if

¹ One of the *zemis* figured by Charlevoix in 1731 (*Histoire de l'isle Espagnole ou de S. Domingue*, t. 1, p. 61) has oblique eyes.

to corroborate the story of this *paisano*, the object, which is hideous enough in form and feature to frighten any one when encountered in the gloomy environment of a cave, still shows the marks of the machete. A wooden stool or *duho* from "Turk's or Caicos islands," in the Smithsonian collection described by Mason, is said to be hacked "by the hatchet of a vandal." Perhaps the mutilation was due to fear rather than to malice.

I had a good opportunity for collecting current folklore regarding caves in the course of some excavations in the Cueva de las Golondrinas near Manatí. It was believed that considerable treasure had been buried in this cave by pirates, and excavations had been made in the floor to find a chest of gold supposed to be hidden in it. Deep holes showed that considerable work had been done there from time to time in search for the treasure. The country people believed that this work should be carried on only at night, and during its prosecution voices are said to have been repeatedly heard by the workmen, and warnings not to disturb the soil were often repeated by unseen denizens of the place. Of course no treasure was found, but there was a feeling among some of the workmen that the cave was inhabited by spirits who appeared from time to time, especially after dark.¹

Although the existence of these pictographs and the great quantity of débris, consisting of ashes, pottery fragments, and other human rejecta, show that the caves of Porto Rico were resorted to by the prehistoric inhabitants of the island, it cannot be said that the evidence is all that might be desired to prove continuous habitation. These caverns were used for ceremonies, and at times as places of refuge; the dead were also undoubtedly placed in them with mortuary offerings. Some of the caves were sacred and contained idols, others were secular shelters, resorted to for protection

¹The Indian belief that caves were the dwelling-places of spirits is mentioned by several writers of the sixteenth century. These spirits were supposed to leave the caverns and wander over the earth at night. The superstition is still current in several West Indian islands. The Antilleans, like the Pueblo Indians of our Southwest, believed that the first man and woman emerged from a cave in the earth or were born of the Earth Goddess. The dead were supposed to return to the caves, consequently (especially as ancestor worship played a most important rôle in their worship) they performed many of their ceremonies in caves and subterranean caverns.

from the elements, or as camping places of Caribs, whose canoes were drawn up on the neighboring beach. To the last-mentioned class belongs the Cueva de las Golondrinas. The people who used it encamped in its shelter and cooked their food there, as the broken fragments of pottery and the numerous bones of animals attest. They may have visited it for religious purposes also, as the pictographs would imply; they may have buried their dead in its remote recesses, but if they did so the skeletons have long ago disappeared. Whether they were occasional visitors from distant islands or natives of Porto Rico cannot be told, but so far as the material which has been exhumed from the floor of the caves indicates, the former visitors were racially related to the Caribs of the Lesser Antilles and those of the coast of Santo Domingo. We know that the Caribs from near-by islands, like Vieques, were accustomed to land on the Borinquen coast, kill the men, and carry off the women into slavery; they even remained and made settlements, in course of time assimilating with the Borisqueños by marriage. It does not appear improbable, therefore, that the beach near the entrance to this cave may have been a Carib landing place, and the cave a shelter which they sought while encamped on the island.

PICTOGRAPHS ON STONES BOUNDING ENCLOSURES

Among the problematical objects in the Latimer collection, described by Professor Mason, are certain rudely cut monoliths to which he applies the name pillar-stones. These objects vary in size and shape from simple slabs decorated with incised pictographs on one or both surfaces to rude idols with a head sculptured on one end. One of the more elaborate examples is illustrated in plate XLVII.

Of the function of these pillar-stones no suggestion has been made up to the present time. Mason calls attention in his description to the rude technique as compared with that of smaller stone objects, called idols, referring to Fray Ramón Pane's account¹ of

¹ Fray Ramón Pane, a Catalan Franciscan priest, was one of the few early fathers who could speak the language of the natives of Santo Domingo. At the request of Columbus he prepared an account of the religion of the natives of Hispaniola, which was printed in the *Life of Columbus* ascribed to his son Fernando. Harrisse strongly questions the authorship of this life, but there seems no good reason to doubt that it contains a true copy of Pane's account of the religion of the natives.



PILLAR STONE FROM PORTO RICO



the temples of the caciques or chiefs in which it was customary to have images "carved of wood or stone or shaped of clay or cotton,"¹ generally in some monstrous form." On consulting Pane's description of the stone idols, I find that he nowhere refers to what we know as pillar-stones. The massive stone slabs were not house gods of caciques, but were the boundary walls of enclosures near prehistoric pueblos — places in which were held ceremonial dances and games. A proper understanding of my interpretation of these stones necessitates a brief description of the enclosures.

At various places on the islands of Porto Rico and Santo Domingo the traveler may have pointed out to him certain rectangular areas known to the country folk as *cercados de los Indios*, *juegos de bola*, or *bateys*. These enclosures in Porto Rico were first identified and described by Dr Stahl in his well-known work, *Los Indios Borinqueños*.

As indicated by their names, these areas are supposed to have been connected in some way with an Indian game of ball, and in corroboration of this interpretation attention is commonly called by the natives to stone balls, supposed to be artificial in shape, which are found in or near the enclosures.

The *bateys* which I have examined are generally situated on terraces above the river-beds, high enough to be safe from the great freshets which commonly accompany hurricanes. Their floors, which are comparatively level, are slightly depressed below the surface, and the whole structure is bounded by laminated stones, arranged in a row, the original alignment of which is now much disturbed. Along the coast, where the land has been under cultivation for centuries, these aboriginal structures have been more or less obliterated, but in the mountains there still remain several which are well preserved.

Similar *bateys*, sometimes called *cercados de los Indios*, have been reported from Santo Domingo by Schomburgk and Ober. According to the former another one of these enclosures at San Juan de

¹One of the most remarkable of these cotton images was described and figured by me in 1891 in an article "On Zemís from Santo Domingo" (*American Anthropologist*, vol. IV, pp. 167-175). The head of this specimen is a human skull, the body and limbs of cotton cloth. The object has also been figured by Mr Rudolf Cronau in his work on America.

Maguana is circular in form and "consists mostly of granite rocks, which prove by their smoothness that they have been collected on the banks of a river, probably at the Maguana, although its distance is considerable. The rocks are mostly each from thirty to fifty pounds in weight, and have been placed closely together, giving the ring the appearance of a paved road twenty-one feet in breadth, and as far as the trees which have grown from between the rocks, permitted me to ascertain, 2270 feet in circumference.¹ A large granite rock, five feet seven inches in length, ending in obtuse points, lies nearly in the middle of the circle. . . . The cavities of the eyes and mouth are still visible."²

It is instructive to learn that enclosures similar to these *bateys* have been observed in British Guiana. Mr C. Barrington Brown describes a ring of stones somewhat smaller than that at San Juan de Maguana. In this structure the aligned stones were two to three feet high and five to six feet apart, the circle being only about thirty feet in diameter. This ring of stones apparently had a pillar-stone with a pictograph on it, for Mr Brown says that upon one of them was "a deeply cut picture of a frog." The Peruvians had similar areas enclosed by a row of aligned stones.

I have more especially studied these enclosures along the Rio Grande de Arecibo and its tributaries, where there are several well-preserved examples. It would be conservative to say that in pre-historic times the banks of this river along part of its course were so thickly lined with these places that one at least could hardly have been lost to sight at any time, especially near the present town of Utuado.³ In my investigations near this town I learned of over twenty of these enclosures, the most important of which

¹ While in Santo Domingo I was told that similar but smaller enclosures are found in several localities in this island, and that they are known as "*corrales de los Indios*."

² Mr H. Ling Roth's comment on Schomburgk's identification is as follows: "His supposition as to the figure being an idol is quite guess work." On the contrary I think there is considerable probability that the supposition is a correct one, since like idols of massive form are found in Porto Rico within or near similar *juegos de bola*.

³ This modern settlement probably stands on or near the site of an Indian town of the same name in the caciquedom of Guarionex, who was hostile to the Spaniards. It is mentioned by Oviedo, under the name Otoao, in his account of the flight of Juan Gonzales after the death of Sotomayor. I find no mention in early writings of a cacique of that name.

are situated in the following *barrios* or wards of that town: 1, Cayuco; 2, Arenas; 3, Salto Arriba; 4, Vivi Abajo; 5, Jayuya; 6, Mameyes; 7, Paso del Palma; 8, Don Alonso; 9, Alfonso XII.

There is considerable variation in the size and outline of these enclosures, as well as in the state of preservation of the boundary stones; but as a rule they are rectangular areas slightly depressed below the surrounding plain and are bounded by a row of aligned flat stones set on edge, the individual stones being more or less widely separated and often disturbed. It is common to find small mounds¹ just outside the wall of the enclosure, but these in some cases have been so reduced in size by the cultivation of their surface that it is now impossible to determine their original contour.

In my studies of one of these enclosures at Utuado I found that the main road from that town to Adjuntas had cut through the edge of one of the mounds, revealing, a few feet below the surface, a layer of soil containing fragments of pottery, a few broken celts, and the long-bones of an adult. This discovery induced me to extend a trench diametrically through the mound, parallel with the side of the enclosure. The depth of this trench, at the middle of the mound, was about nine feet. The excavation revealed that the mound rested on a hard gravel base, and was composed of soil so rich that some of it was carried away by the neighboring farmer for use as fertilizer. This earth was very moist and ill-adapted to the preservation of bones or other fibrous material. Nevertheless, we found ten skeletons of adults and infants, with mortuary objects so distributed as to indicate that they had been placed there as offerings. One of the best preserved of these skeletons was found in a sitting posture, with the legs drawn to the chest, and with ceramic objects lying at one side. The frontal bones of the skulls were abnormally flattened, as in those from the caves in the northern part of Santo Domingo, described by Dr Llenas.²

The discovery that these mounds are Indian cemeteries sheds light on the nature and use of the neighboring enclosures. The conclusions drawn from my excavations of the Utuado mounds are

¹ I identify these mounds with the *caney*s mentioned by Antonio Bachiller y Morale, in his well known work, *Cuba Primitiva*.

² *Découverte d'un Crane d'Indien Cigüayo a Saint-Domingue*, Nantes, 1891.

that large numbers of the dead were buried just outside the dance courts, and that the elaborate *areitos* or mortuary dances were held in the latter. There is also evidence of the interment of the dead in caves, human skeletons from the cave at Jobo, near the road from Arecibo to Utuado, having been given to me by Dr Cabello; but the majority of the prehistoric Porto Rican dead were undoubtedly buried in the cemeteries above referred to.

Of the nature of the dances performed by the Antilleans at the time of the interment little is known, but from what has been described by Gumilla as occurring among the kindred Orinoco tribes, it is probable that they were very elaborate. One custom is especially noteworthy: Among certain of these tribes it was their habit to place staves around the grave, to the ends of which were tied stone effigies or images imitative of the heads of the totems of the dead. Apparently this custom was also practised by the people who lived near Utuado, in corroboration of which theory it may be mentioned that a stone face was found on or near the mound. This stone face resembles the so-called masks described and figured by Mason, but its size and general shape preclude its use as such. Moreover, certain other objects of the same general shape have a groove on one side in which is fitted a stave to which the whole object was tied. There is good evidence that these so-called stone masks were really mortuary emblems which were fastened to sticks and set about the graves of the dead, where they remained for some time, especially when mortuary dances were being performed in their honor.

In considering the use to which the Indians put these enclosures Dr Stahl points out that if they marked the dwellings of chiefs, the walls over which a child might jump would be useless for protection. The boundary stones were not placed in line to indicate burial places,¹ although cemeteries were not far away; for the enclosure is sunken below the level of the adjacent plain. The popular theory that they were places for ball games is no doubt sound so far as it goes, but these gatherings were only one of many kinds held by the prehistoric Indians of Porto Rico.

¹ Evidently the ancient Porto Ricans had several ways of burial, as Oviedo asserts in regard to the Haytians. The cemetery in the valley of Constanza, mentioned by Schomburgk (*Athenaeum*, 1852, pp. 797-799), may have been similar to that near Mameyes.

The general appearance of these enclosures, with their idols and pictographs carved on some of their boundary stones, and the presence of neighboring mounds (some of which were burial-places, others the sites of prehistoric pueblos), confirm my belief that they were plazas in which were celebrated the ceremonial dances called *areitos*, especially those mortuary rites of ancestor worship which reached such high development among the prehistoric Porto Ricans. Here were performed dances commemorative of the dead interred near by, and here songs were sung in memory of their ancestors, as Oviedo and others have stated.

In addition to ceremonial *areitos*, games also, no doubt, took place in these enclosures, which correspond in a measure to the plazas of the pueblos of our Southwest, which are used for all public functions.

The Indian town must have been near by, for Oviedo says that near each pueblo there was a place for *batey* or the ball game.¹ While the appropriateness of the name locally given to these enclosures has a foundation in tradition, and while they may have been used by the Indians for games, the discovery of the adjacent cemeteries indicates that they were used also in the performance of *areitos*, of which the Porto Rican aborigines had many kinds. But as games among the Antilleans were probably half secular and half religious, there is no reason why they should not have been performed in plazas sometimes used for purely ceremonial *areitos*.

The discovery of stone balls in these enclosures is often mentioned as an indication that these places were used in ball games, implying that the stones were the balls used. This belief, which is a common one among the country folk of the island, has little to support it on examination of the objects themselves. In Oviedo's account of the game, the ball used is said to have been made of a resinous gum, so that stone balls do not fit at all his statement of the method of playing the game. Indeed, some of the larger stone

¹ The prehistoric Porto Ricans did not build permanent stone or adobe habitations, but only temporary structures with a wooden frame and palm-leaf covering. These have long ago disappeared, but their sites still remain in the form of mounds just outside the *juegos de bola*. In Muñoz's description of an Indian pueblo near the coast, no mention is made of a neighboring *batey* or dance plaza.

balls, which are over two feet in diameter, could hardly be carried by a single man. Moreover, many of the balls are not spherical, but are simply water-worn boulders in the form of oblate or prolate spheroids. Considering these facts, I have serious doubt whether the stones could have been used in the ball game described by Oviedo, although this does not of course preclude their use in some other game. Their presence in graves and in dance plazas indicates that they were enough prized to have been brought there for a purpose, and I offer the following speculation as to their use:

Water-worn stones are symbols of running water, the worship of which is highly significant in the rain ceremonies of primitive agriculturists. In an almost universal confusion of cause and effect, so common among primitive people, these stones, shaped mainly by running water, are believed to have magic power to bring rain or to cause water to fill the stream-beds. Hence they were gathered by the Indians and carried to dance and other ceremonial places where they are now so commonly found. We often find that water-worn stones are worshiped by other primitive agriculturists because of the belief that these objects cause the water, which has given them their form, to increase, just as the frog, which lives in moist places, is believed to effect an increase in the water supply.¹

It is interesting to add, in discussing the probable use of these stone balls, that Dr Stahl, who has given much attention to the botany of Porto Rico, after stating that part of the description of *batey* given by Oviedo was derived from the game played by the South American Indians, declares that there is no natural vegetable product in Porto Rico which furnishes an elastic gum² that could have served the aborigines for the balls used in the game. Whether or not the prehistoric Porto Ricans played the ball game described by Oviedo is beyond the scope of this article, but certainly the

¹ Many instances might be cited in which, among primitive men, water-worn stones and sticks or water animals are believed to be efficacious in bringing water. To these may be added shells of water animals, water plants, and other objects—in fact anything from the water or pertaining to it.

² Stahl regards it as probable that this *goma elástica* was obtained from a tree, *Siphonia elastica*, peculiar to the mainland ("costa firme").

stone balls found in the dance plazas could not have been used in the manner Oviedo describes.

But the above explanation does not fully account for the name "*juegos de bola*," which survives from early times and which evidently originated among the Spaniards, who, from knowledge of the use of these enclosures, applied it to the latter. The prehistoric Porto Ricans may have performed, in these enclosures, games or ceremonies with stone balls ; such games were known to Oviedo, but in his description he does not carefully distinguish them from those in which elastic balls were used. Similar games, which have been ascribed a phallic significance, are recorded from Yucatan and elsewhere. In the absence of documentary proof of the existence of a prehistoric game with stone balls in Porto Rico we have little basis for speculation regarding their "phallic" significance, but that this game, when it existed, had a symbolic germinative meaning among the tribes which practised it is not improbable.

An examination of the boundary stones of several of the dance plazas reveals the significance of Professor Mason's so-called pillar-stones. Some of these stones, still standing, bear pictographs representing faces and heads identical with those which Mason describes, leaving no doubt of the identity of the two. The massive pillar-stones, sometimes sculptured into rude idols, more often with only the head cut in relief, and most commonly bearing an incised pictograph, formerly stood with other aligned stones which formed the enclosures used by the aborigines for the performance of their public dances and games. A pillar-stone found near one of the Utuado dance places belongs apparently to the same type as those described by Mason. It has a human face cut on one side near the end, in the same manner as one of the specimens in the Latimer collection.

This may be an appropriate place to call attention to the markings on the side of the face depicted on one of the pillar-stones in the Latimer collection. Professor Mason says (page 379): "On the right side of the face are two hieroglyphic marks, the one in the shape of a heart, and the other resembling a cleaver with two small furrows running from the edge. Now and then a heart-shaped stone implement turns up in our collection ; but we are not

to suppose that the American aborigines used this to symbolize the human heart itself or the domain of Cupid."

I believe the heart-shaped and cleaver-like markings on the side of the head depicted on this pillar-stone represent ears and ear-pendants. These pillar-stones, some of which are simply slabs with pictographs upon them, sometimes take the form of rude idols in which the head and sometimes the bust are cut in relief. There are representatives of these in the Latimer collection, and I have seen others at various places in Porto Rico. Some of the latter are of great size and weight, as one which formerly stood in the plaza at Rio Piedras, not far from San Juan. This specimen weighs several hundred pounds, and when I saw it served as a curbstone in front of the "Farmácia Monclava" at Rio Piedras, but later it was carried by the director of public works to San Juan, where it now remains.

One of the best of these pillar stones with sculptured head formerly stood on one side of the dance plaza near Utuado. It was about four feet high and represented a female with head and bust well carved in relief. Later this idol was carried to Arecibo and for many years stood on a pedestal before the house of the Mercedes plantation, but in the great cyclone called "San Ciriaco"¹ it was overthrown and covered with débris which has not been removed.

A consideration of some of these and other forms of pillar-stones naturally leads to rude massive idols which they more closely resemble, and consequently it may be best to restrict the term "pillar-stone" to those stones of pillar form which bear incised pictures and are without carving. Both forms are found among the boundary stones of the enclosures described above, and may have had a like significance. Some of the "stone images or pillar-stones" described by Mason had nothing to do with the boundaries of dance enclosures, while others had. Obscurity might be avoided by restricting the former term to slabs containing pictographs.

CONCLUSIONS

It remains, in conclusion, to say that Porto Rican pictographs, whether found on river boulders, in caves, or on pillar-stones sur-

¹ On August 8, 1899, Utuado and the other towns and plantations along Arecibo river suffered severely from this hurricane.

rounding dance places, are similar to those which have been recorded from the Lesser Antilles — St John, St Vincent, Guadeloupe, and others.¹ This resemblance tends to support the theory that the people who made them in prehistoric times were practically one and the same. The proximity of the river pictographs to running water, no less than their forms, allies them to similar pictographs on the Orinoco and other rivers of Venezuela and Guiana. We may justly suppose that the prehistoric Porto Ricans regarded them with much the same reverence as do the people of Guiana their *timchri*, or rock-carvings, described by Im Thurn. The general character of the river pictographs in Porto Rico and their situation in or near running water clearly indicate that they mark places of ceremony, and were connected in some way with water worship, which is known to have formed a conspicuous element in the religion of the Antilleans, who had a feeling of awe for these waterfalls and especially for the mystic figures upon the adjacent rocks. The rivers in which they are found are often turbulent, overflowing their banks, setting at naught the work of the farmer, and, at times when hurricanes rage (which the Indian ascribes to the Sky God, *Huracan*), devastating the valleys through which they flow. It would have been natural for the Indians to resort to such places as waterfalls, where the power of the water is most manifest, to appease the angry god, and here we would expect to find rock-etchings and other evidences of such gatherings.

The argument for the possible derivation of the ancestors of the West Indian islanders, so far as pictography goes, corroborates that based on other and more significant data. Antillean pictography is decidedly South American rather than North American. Undoubtedly, when we are dealing with such highly conventionalized figures as these, there is striking uniformity among primitive people all over the globe, so that too great weight should not be given to similarities in culture; but neither should we neglect likenesses, especially when taken in connection with other data indicating tribal migrations and racial affinities. Aboriginal Porto Rican pictography is essentially the same as that of the Lesser Antilles,

¹ See Ober, "Aborigines of the West Indies," *Proc. Amer. Antiq. Soc.*, April 25, 1894.

which is practically identical with that of Guiana and parts of Venezuela. Moreover, this similarity is not limited to that part of these two countries fringing the Caribbean sea, for the same likenesses may be detected far into the interior of South America where the Orinoco and the large rivers of Guiana have their sources. Pictography of the West Indians thus supports philology, technology, and religion, as witnessed by ceremonies and beliefs, indicating that the Antilleans originally came from South America, or that man in his distribution has followed the same law of migration to these islands as plants and animals, and came from the same continental land mass.

I believe that the West Indies were originally peopled by colonists from South America, who made their way from the delta of the Orinoco, passing from island to island until they occupied all the Antilles, great and small. Of all the Orinoco tribes these pioneers of the Antilleans were more closely allied to the Guaranos, or Warrans, who now inhabit the delta, than any other; but lapse of time profoundly changed the culture of both, the latter having greatly degenerated while the former, long since having passed away, once reached a comparatively high stage of culture. Although descended from a related stock, originally the same as that of most of the now wretched "Warrans,"¹ the members who migrated to the West Indies developed in Hayti and Porto Rico a distinctive culture, as shown by their characteristic polished stone work. Cuba and Jamaica also shared this culture, but only partially, for in these islands there appear to have been savage intrusions from north and west.

The culture attained by the Hayti and Porto Rico people was threatened on the east by the Caribs, who also came from South America and who overran and conquered all the Lesser Antilles to the eastern end of Porto Rico.

The Carib invasion of the West Indies was but a continuation of their conquest of the tribes which preceded them in Venezuela along the banks of the Orinoco. In early times numerous sedentary peoples, who had developed a certain degree of culture, in-

¹ For an interesting account of a visit to one of the pile villages of these Indians, see Gumilla, *El Orinoco ilustrado, y defendido*, etc., vol. 1, pp. 161-172, Madrid, 1745.

habited the banks of this mighty river. In a way they were all distinctly related in language, customs, and religion. They were of necessity a fluviatile race, or were experts in building canoes and in navigating them in these great streams. From somewhere, perhaps the interior of the country, the so-called Caribs descended upon the river peoples, and those whom they did not destroy they drove into such inaccessible regions as the Orinoco delta. Not satisfied with the destruction they had wrought in the Orinoco valley on the mainland, they extended their depredations to the islands, ravaging the coasts of Santo Domingo and Porto Rico, and practically absorbing the race which preceded them in the Lesser Antilles.¹

But, as always happened in conquests of this kind, especially where women were captured and taken to wife by the conquerers, the Caribs became more and more a mixed race, both in blood and in culture. An assimilation of the original people and the Caribs had in fact taken place in the Lesser Antilles, which resulted in a culture which was *sui generis*. In the Greater Antilles this mixture of the two peoples had not gone so far, although the wave of Carib invasion had practically reached Culebra and Vieques island and had also made itself felt in Santo Domingo and Porto Rico,² so that the eastern end of the latter island was practically Carib by the time it was settled by the Spaniards.

If we recognize the mixed character of the aborigines which Ponce de Leon found in Porto Rico — partly Carib, partly an antecedent race, or descendants of the union of the two which had occurred in the Lesser Antilles or earlier in the valley of the Orinoco — a discussion of the question whether Porto Rican pictographs are Carib or not can hardly lead to any important conclusion. From the point of view of blood or culture the island Caribs were no longer the same people as their ancestors in the interior of Venezuela.³

¹ I hope to be able to enlarge my discussion of this question in an article more general in its scope.

² Some of the early accounts even call Porto Rico a Carib island, and on old maps the sierras on the eastern end are named the Carib mountains. There was a strong infiltration of Carib blood on the island, but the preëxisting people had not been wholly absorbed.

³ "All the Island, Orinoco, and Guiana Caribs," writes Brinton (*The American Race*, pp. 251-252), "can thus be traced back to the mainland of northern Venezuela."

I have limited this paper to what may technically fall in the group of symbolic markings known as pictographs, but believe that a proper discussion of the meanings of these rock-etchings implies an examination of incised designs on stone, wood, clay, and other objects of aboriginal manufacture. There is abundant material of this kind awaiting study, but it cannot be considered in this place. This account, however, would be incomplete if it did not call attention to the fact, which in the main goes very far to establish the antiquity of these pictographs, that there is a close similarity, amounting to identity, in their form, to the incised ornamentation of stone and wooden stools,¹ idols, and ceramic objects. As there is no reasonable doubt of the antiquity of the latter, we are justified in ascribing an equal age to the rock-etchings.

In the opening pages I have pointed out the paucity of our knowledge of the pictography in two of the islands of the Greater Antilles, and have ascribed this absence rather to imperfect exploration than to real absence of pictography in the islands mentioned. But it is certainly significant that these picture-writings are so common in that part of the West Indies inhabited by Caribs, and so rare in Cuba and Santo Domingo. There is no doubt in my mind that the Caribs were the authors of the pictographs of the islands which they inhabited, and they may also have inscribed many of those in Porto Rico, especially in its eastern part; but there is some doubt about the makers of the Utuado pictographs

The word *Carib*, as the designation of a heterogeneous collection of people of mixed blood in which now one, now another, stock predominates, has outlived its scientific usefulness. As now defined, or undefined, it means nothing, not even similarity in language. Contrast, for instance, Father Breton's translation of the Lord's Prayer of the "Caribs of the Antilles," with that of the "Caribs of the Continent," or those who live in the Venezuelan state of Barcelona, as published by Rojas (*Estudios Indigenes*, pp. 203-204).

¹ Called *duhos* or *turey*. The latter name is still given in Porto Rico to native seats used by the Jibaros. The name *turey* was also applied to the sky and means the "brilliant or shiny object." The *duho* was the most shining object in the Indian cabin. When Gumilla visited the wretched survivors of the Guayquiri, a remnant of a tribe allied to the Warrans and also to the ancestral Antilleans, he found that they had seats made of logs of wood which they called in their language *tures*, the same as the prehistoric Porto Ricans. He found these Guayquiri were the remnant of a large "nation" living on the south bank of the Orinoco, and that the Caribs had almost wholly destroyed them, as they did most of the other members of this stock who lived along this great river and its tributaries. (*El Orinoco ilustrado*, vol. II, p. 66.)

in the sierras of Porto Rico, although Guarionex, who was cacique of this region, may have been a Carib. I am inclined to think that the natives of Borinquen were as expert in this work as the Caribs of Guadeloupe and St Vincent; certainly my studies in Porto Rico have shown the existence of pictographs all over the island, in the mountains as well as on the coast.

We know so little of the conventional symbolism of the aborigines of the Antilles that it is difficult to hazard an explanation of the meaning of individual pictographs, but we may very properly suggest an interpretation of their general signification. Their position, whether in caves, near rivers, or on boundary walls of dance plazas, implies their connection with rites or ceremonies, and the great care given to the cutting of them shows that they were not merely of passing or temporal importance. They were, in other words, religious rather than secular symbols, as similar figures still are to the primitive people of Guiana. They represent powers or beings which were worshiped, for among them are figures of the Sun or Sky God and of the whirlwind or whirlpool. These symbols are almost universal, especially with sedentary people among whom earth and sky worship is so pronounced. In addition to the two symbols of great nature gods, or magic powers of sky and earth, many of the pictographs represent other gods or subordinate powers. They are conventionalized figures of *zemis*,¹ or ancestral clan tutelaries, practically totems of the prehistoric peoples who performed their rites and ceremonies in the neighborhood of the rocks upon which they are found.

¹ A *zemi*, as elsewhere explained, is a spirit, or the image, picture, or symbol of the same. The skull or other bones of the dead also served as *zemis*, and the same name was sometimes applied to a *boii* or priest when he personated a spirit. Sometimes a man painted his *zemi* or totem on his body, sometimes he cut it on the rocks in the form of pictographs. See "Prehistoric Porto Rico," Vice President's Address, Section H, *Proc. Amer. Assn. Adv. Science*, vol. LI, 1902.

ZUÑI GAMES

By MATILDA COXE STEVENSON

INTRODUCTION

By enlightened people games are associated with sport and recreation. Among some primitive peoples games are played primarily for divination, but the ceremonial games of the Zuñi are for rain, and they constitute an important element in their religion and sociology. They are not played in a haphazard way; each game has its regulations and limitations, and there is deep meaning underlying all Zuñi games supposed to have come to them from their gods.

The games (*ikoshnawc*) here recorded embrace all that are of importance, but do not include the essentially children's games. While the youngsters have a variety of sports exclusively their own, they may be found any pleasant day enjoying some of the games of their elders, and, like their elders, they indulge in betting, for this habit is developed in the North American Indian while he is still in his infancy. The younger Zuñi children play the ceremonial games, however, with but little or no understanding of the occultism associated with them.

Aside from personal observations of the games, the writer's investigations have been through the Ah'shiwanni (rain priests), elder and younger brother Bow-priests, personators of the Kóyemshi (certain anthropomorphic gods), and theurgists. As the elder and younger brother Bow-priests are the earthly representatives of the Gods of War, they are supposed to be infallible in regard to all things associated with these deities.

The sages of Zuñi claim that the first eight of the seventeen games mentioned herein belong to the Gods of War, who were great gamesters. Of the remainder, one, they claim, was originated by the Zuñi, four are the games of the Kóyemshi, one was adopted from the Navaho, and three came from Mexico. The games are as follows:

1, *Tikwanē*, pl. *Tikwawe* (Foot-race). 2, *Shóliwe* (Arrow reeds). 3, *Íankolo'we*. 4, *Hä'poānnē pihl'kwanáwe*. 5, *Said'hlát'awe* ("Horns kill," or Killing the Rabbit). 6, *Shówiáltorwe*. 7, *Lápo-chiwe*. 8, *Hó'kāmonnē*. 9, *Pó'kiānnawe* (Jackrabbits hit). 10, *'Sikon-yā'munē tikwanē*. 11, *'Kāsh'tuwiwi*. 12, *Yächoni 'sáwa'ka* (Ring-around-a-rosy). 13, *Póponē* (Ball). 14, *Tá-sholiwe* (Wood reeds). 15, *Póponē 'kápnanē* (Ball hit). 16, *Tān'kalawe* (Quoits). 17, *Áwe 'hlacnawe* (Stones kill).

There are but two exclusively religious games of *tikwawe* played annually. In one, members of the *kiwi'siwe* (chambers dedicated to anthropomorphic worship) play, and in the other the clans take part. Both of these races are for rains to water the earth that the crops may grow. They take place some days previous to corn planting, which usually occurs from the tenth to the fifteenth day of May.

Other games of *tikwawe* may occur at any time when not forbidden by the retreat of the Ah'shiwanni for rain.¹

TÍKWANĒ RACE OF THE KÍWI'SIWE

The Ah'pi'lāshiwanni (Bow priesthood), or warriors, convene at the full moon of April and remain in session throughout the night. On the following morning they prepare *télikyináwe* (prayer-plumes). These offerings to the Gods of War are deposited at noon the same day at a shrine north of the village. This shrine is on the ground supposed to have been occupied as the home of the Gods of War during their stay at Ítiwanna (the site of the present Zuñi). The other prayer-plumes are made into five *'káètchiwe* (sing. *'káètchinē*) or groups of *télikyináwe* bound together at the base. The sticks of four groups are colored black and are offerings to the deceased members of the Ah'pi'lāshiwanni.

¹ *Tikwanē* has been described by Mr F. W. Hodge in the *American Anthropologist* for July, 1890, and also by the late Mr John G. Owens, in connection with other games, in the *Popular Science Monthly* for May, 1891. Mr Owens remarks, referring to *tikwanē*: "This game was described by Mr F. W. Hodge in the *Anthropologist* for July, 1890. I have thought it well to repeat it here in connection with other games, and also to make some corrections and add several points which Mr Hodge seems to have overlooked." Mr Owens, however, labors under as great confusion as Mr Hodge. Though both of these gentlemen have visited Zuñi, where it is presumed they collected the data for their articles, their descriptions are incomplete and in a measure misleading, since they fail to give a systematic account of *tikwanē* as it is played under varying conditions.

The *'kàtchiwe* are deposited at midnight on the four sides of the village by such members of the Ah'pi'lāshiwanni as may be designated by the elder brother Bow-priest, or director of the organization, in excavations carefully concealed by stone ledges, set in plaster, which extend along the exterior of houses, furnishing seats for those who like to sit out in the balmy afternoon of a New Mexican winter or to enjoy the cool breezes after sunset in summer time. These ledges are identical with those before many other Zuñi dwellings. The depositors of the plumes know just which slab to remove in order to have access to the depository. The fifth group consists of two *télikyináwe*, one of which is dotted with the various colors for the zenith, the other is black to represent the nadir. These are offerings to the Sā'lāmobia, certain warrior gods of the zenith and the nadir. This group is planted in an excavation, also concealed by a slab seat, on the west side of Siaátéwita or sacred dance plaza. After the placing of the *télikyináwe* the Ah'pi'lāshiwanni continue their songs and ceremonies in the ceremonial chamber until sunrise, and soon afterward the elder brother Bow-priest announces from a house-top that the people of the *kiwi'siwe* will run in four days.

The director of each *kiwi'sina* (pl. *kiwi'siwe*) gives formal notice to his people,¹ and the young men who wish to take part in the race appear at the appointed time. Those from the *Hérwa* (north), *Hé'kapawa* (nadir), and *Chipawa* (south) *kiwi'siwe* represent the side of the elder God of War, while those from the *Múhe'wa* (west), *Óhe'wa* (east), and *Úp'sánáwa* (zenith) *kiwi'siwe* represent the side of the younger God of War. After an early breakfast (the runners having exercised before the meal), nothing more is eaten during the day but crushed *héwe* (wafer-like bread) in water.

In the afternoon the first body of Ah'shiwanni² (the elder brother Bow-priest being also Rain-priest of the nadir) proceed about a

¹ Every male receives involuntary and voluntary initiation into the Kótikili, a fraternity associated with anthropomorphic worship, becoming allied with one of the six *kiwi'siwe*.

² The writer designates the Ah'shiwanni of the six regions, whose prototypes are the members of the Council of the Gods, as the first body of Ah'shiwanni. There are a number of other Ah'shiwanni in Zuñi.

mile south of the village, over the road leading to the present "home" of the Gods of War, and here the elder brother Bow-priest lays upon the ground a *lāshowanē* (one or more plumes tied together), composed of two upper wing-feathers of a bird called *shó'kapiso*,¹ and the younger brother Bow-priest places a similar *lāshowanē* on the ground and west of the other, the distance between the two *lāshowawe* being the length of the extended arms from finger tip to finger tip. The Ah'shiwanni group west and the Ah'pi'lāshiwanni east of the plumes; the elder brother Bow-priest standing with his fellows of the Ah'pi'lāshiwanni, the younger



FIG. 13. — *Tikwaawe* of the Bow-priests. (The plumes are attached only when the *tikwaawe* are made as offerings to the Gods of War.)

brother Bow-priest with the Ah'shiwanni. A line is made south of the plumes by drawing, or rather pushing, the foot over the earth from west to east.

Six members of the Ah'pi'lāshiwanni selected by the elder brother Bow-priest have each a *tikwanē* made by himself. Three of the *tikwaawe* are colored black at either end and midway, indicating

¹ A bird, as the Zuñi say, which flies but never tires. The writer failed to obtain a specimen, but she is quite sure it is a species of hawk.

the sticks of the elder God of War ; and three are painted black midway only for those of the younger God of War (figure 13).¹

The six warriors, clad only in breechcloths, stand by the line, the one at the east end having the *tikwan* of the elder God of War, the man at the right having that of the younger God of War, and so they alternate down the line.

Each warrior places his right foot on the line and the stick across the foot near the toes ; he then sprinkles meal upon the stick and prays for rain and for success in the race. The Ah'shiwanni also sprinkle meal and pray for rain. In the meantime the runners gather at the base, which is south of the pueblo and just across the river which flows by the village.

The racers (the number is not limited) wear only kilts, and the long hair is drawn back and tucked into the headkerchief, or *banda*, at the back, the hair being brought over the band and tucked in from the top. A member of the Bow-priesthood marks off the line on the earth, similar to the one described, upon which the runners take position, facing south. The warrior who stands some feet beyond the line carries a bow and arrows in his left hand and an arrow in his right. He directs the runners in the course they are to take, and, facing east, prays and sprinkles meal eastward. The meal is thrown four times, the fourth being the signal for the start. No word is spoken. The course is south to the group of Ah'shiwanni and Ah'pi'lāshiwanni—a course that must never be deviated from in these races, as this is the road of the Gods of War. On reaching the body awaiting them, each runner passes between the two *lāshowawe* previously described. Bending and extending his hands toward the plumes, he brings his hands to his mouth and draws in a breath from the plumes, that he may run like the *shō'kapiso*, which flies but never tires. The runners do not halt, but pass right on. Each Pi'lāshiwanni in the line calls out the name of the *kiwi'sina* he represents as he kicks the *tikwan* into the air. The runners of each *kiwi'sina* at once look to their appropriate sticks. They are followed by the first body of Ah'shi-

¹ Both Mr Hodge and Mr Owens say that these *tikwawe* are placed on the trail three or four days previous to the race. It would certainly be very difficult to find these bits of wood after four days on a trail frequented not only by men but by burros and other beasts.

wanni and Ah'pi'łāshiwanni, except the elder and younger brother Bow-priests. The Ah'shiwanni and Ah'pi'łāshiwanni, however, do not attempt to keep pace with the runners, who move in a circuit, but return instead to the *łāshowawe*, which are guarded by the elder and younger brother Bow-priests, passing between the latter and on to the village.

The *tikwawe* are kicked into the river, to go to Kó'hluwaláwa (abiding place of the Council of the Gods), and the runners hasten to their homes. The ceremony of washing the hair of the runners occurs before the race and also on the morning after the race.

The younger brother Bow-priest makes an excavation the depth of his arm, and the two *łāshowawe* are deposited therein, with prayers by the elder and younger brother Bow-priests to the *úwannami* (rain-makers) for rains. These two now proceed to the base, where the large crowd gathered to greet the returning runners still remains.

At this point the elder brother Bow-priest cries out that the *ä'notiwe* (clans) will run in four days.

The race of the *ä'notiwe* may occur simultaneously at one or more of the farming districts, where most of the Zuñi at this season are gathered. It also takes place in Zuñi, provided a Pi'łāshiwanni is present to start the racers. The observances previous to the race of the *ä'notiwe* are much the same as those for the race of the *kiwł'siwe*. A member of each clan makes the *tikwane* to be used by the racers of his clan, and he is free to select that of either one of the Gods of War. The runners dress as on the previous occasion, and their hair is done up in the same manner. The clan symbol is painted on the breast of each runner, and that of the paternal clan is painted on the back. Those of the Pichikwe (*Cornus stolonifera*) clan have a conventional design of the dogwood, including the roots, on the breast, and below a macaw or raven with the head pointing to the left, according to the division of the clan to which the man belongs.¹

¹ The writer adopted Cushing's translation "*Pichikwe* (macaw)," until a more familiar acquaintance with the Zuñi tongue led her to make closer investigation concerning the word. The division of the Pichikwe clan is what leads the student into error, yet one familiar with the language should readily see that *pichikwe* comes from *pichiko*,

The Pi'lāshiwanni makes a line near the river bank, south of the village, by drawing or pushing his foot over the earth, as has been described, and the runners stand upon the line, facing south, each clan being together, the runner at the west end of the line placing the *tikwanē* across his foot, as before noted. The Pi'lāshiwanni stands in advance of the runners, and, facing east, prays and throws the meal four times eastward, the fourth time, as before, being the signal for starting. The same course is followed as that pursued by the people of the *kiwi'siwe*. Each of these races covers only about four miles.

No thought of betting is in the Zuñi mind when these races for rains occur. While deep interest is exhibited by the women as well as by the men in these purely religious races, the real enthusiasm occurs at the time of the betting races, when about twenty-five miles are covered.

The betting race is not confined to the *kiwi'siwe*, nor to any section of the village, although statements to the contrary have been made. A man approaches another with his plan for a race, and if it be acceptable to the other a race is arranged for. It is heralded from the house-top by a civil officer of the village, who shouts, "Tomorrow there will be a race!" Those to be associated with the race gather at the houses of the two managers. The swiftest runners are sure to be present. After some discussion the originator of the race visits the house of the other manager and learns from him how many runners he will have in the contest. He then returns to his house and selects the same number for his side. The number varies from three to six on a side, one side representing the elder, the other the younger God of War.

Each manager calls at the house of one of the first body of Ah'shiwanni—those of the north and the zenith excepted—and announces, "My boys will run tomorrow. You will come to my house tonight." The friends of each party gather at the two

dogwood; *kwe*, plural ending, reference being to a people or body of people. The Macaw division is of no greater consequence in the religious world of the Zuñi than that of the raven. It is the clan, and not the division of the clan, which is of importance. An explanation of this division will be found in "The Esoteric and Exoteric Life of the Zuñi," to be published in the *Twenty-third Annual Report* of the Bureau of American Ethnology.

houses, the runners being on one side of the room, the friends on the opposite side. When the Shiwanni (sing. for Ah'shiwanni) bearing a basket tray of broken *héwe* arrives, he takes his seat on his wadded blanket, the manager sitting opposite to him. The Shiwanni places the basket upon the floor and asks for corn-husks. Preparing as many husks as there are runners for the side, he sprinkles prayer-meal into each husk, and, after adding bits of white shell and turkis beads, folds it and lays it on the *héwe* in the tray. Raising the tray with both hands to his face, he prays for success, and, drawing four breaths from the contents of the tray, says, "Si" ("Ready"). The runners approach, the Shiwanni deposits a handful of broken *héwe* from the tray into the blanket supported by the left arm of each runner, and hands a corn-husk package to each. The body of runners who represent the elder God of War goes to a point north of the village; the other goes south. An excavation the depth of an arm is made by an ancient corn-planter at each point, when each runner opens his husk package, deposits the contents in the excavation, and drops in the *héwe* as offerings to the Gods of War and the ancestors. The one who prepares the earth to receive the offerings covers the opening, leaving no trace of the excavation.

All now sit perfectly still and listen for sounds from the departed. When they hear any noise which they suppose comes from the dead, they are gratified, and say, "*Éllakwa, nána*" ("Thanks, grandfather").

After walking a short distance they halt and wait again for some manifestation. Should they hear a few notes from the mockingbird, they know the race will be in favor first of one side and then of the other — uncertain until the end. If the bird sings much, they will meet with failure. If they hear an owl hoot, the race will be theirs.

The runners return to the houses which they left and retire for the remainder of the night in the large room, the family having withdrawn to another apartment. Sometimes a runner goes to an arroyo and deposits offerings of precious beads to the Gods of War, or to a locality where some renowned runner of the past was killed by an enemy, and, after offering food to the Gods of War with a

prayer for success in the race, he sits and eagerly listens for some sound from the deceased. After a time he moves a short distance and listens again. He then moves a third time and listens, and if he hears anything from the dead he is quite sure of success. If he hears the whistling of the wind he is also likely to meet with success, and if he hears an owl hoot his success is assured. In this event he imitates the owl during the race, which annoys the opposite side, for they know the reason for the owl-like cries.

At sunrise each runner carries a corn-husk containing bits of precious beads and meal a distance from the village and sprinkles the offering to the *úwannam pi'lashiwanni* (deceased members of the Bow-priesthood) of the six regions, for success.

It is the custom for the runners to exercise for the race in the early morning, returning to the houses of the managers where they eat a hearty breakfast; but they must not drink coffee, as this draught distends the stomach. After this early meal nothing is partaken except a small quantity of wafer-bread and water. They remain at the managers' houses until the hour for the race.

By afternoon the betting and excitement have increased until every available object of the bettors is placed in Téwita 'hlánna (the large plaza). Crowds gather around the managers, who are busy looking after the stakes. Everything is wagered, from a silver button to a fine blanket. Yards of calico are brought out, silver belts and precious beads; in fact, all the possessions of many are staked, especially those of the old gamblers, who, having lost heavily in the gambling den, hope to regain their fortunes.

The objects are stacked in two heaps in Téwita 'hlánna, the two managers having charge of arranging the articles. A blanket from one heap finds its counterpart in the other, and the two are placed together, forming the base of a third pile. Drawing in this way from the two piles is continued until they are consolidated into one great heap. Much of the forepart of the afternoon is consumed in this work. When the managers return to their houses and announce to the runners that the task of arranging the stakes is completed, the latter remove their clothing and, after donning a kilt of white cotton or some other light material, take medicine of the Shúmakwe fraternity in their mouths, eject it into their hands, and

rub their entire bodies that they may not be made tired from running. A piece of humming-bird "medicine,"¹ consisting of a root, is passed around; each runner takes a bite, and, after chewing it, ejects it into his hands and rubs his body, that he may be swift like the bird.

The hair is brought forward and a Pi'lāshiwanni forms a long knob by folding the hair over and over and wrapping it with yarn; he then places an arrowpoint in the knot, to insure fleetness; and lifting ashes with two eagle wing plumes, he passes them down either side of the body of each racer and sprinkles ashes to the six regions. This is for physical purification.

Medicine is sometimes put into the paint used on the *tikwan̄*, which for the betting races is painted red instead of black; and a bit of this paint is slipped under the nail of the index finger of the right hand. If a runner is observed to keep his thumb pressed to his finger, it is known that he has medicine under the nail, and those making the discovery are apt to bet high on that side, for they believe the medicine will bring success. Failure in such cases is attributed to the "bad heart" of the runner.

The wives of the two Ah'shiwanni who are present on the previous night go each to the house visited by the husband and remain while the runners are absent. Several parcels, including two blankets, are removed from the heap in the plaza and carried to each house and deposited beside the woman for good luck to the runner.

The runners are accompanied to their base by their managers and Ah'pi'lāshiwanni. Crowds gather. Every man who can obtain a horse is mounted. All is excitement, the women's enthusiasm being almost equal to that of the men, for each wife is interested in the side her husband has chosen, and every maiden is interested in the side of her favorite admirer. While the men gather about the runners as they prepare for the race, and follow them, the women must content themselves in the village.

The two *tikwawe* designating the sides of the elder and the

¹ Mr Owens says in his article on the *tikwan̄* race: "This repast of *héwe* is accompanied by a piece of humming bird, as the flight of that bird is so very swift." This is another illustration of the danger of error in more or less hurried work.

younger God of War are made by the Pi'lāshiwanni of the side of the second manager and are carried by a runner of this party to the base, where he holds the sticks out to the opposite side, one of the party taking the *tikwanē* of his choice. The racers do not form in regular line. Each leader places the stick across his foot near the toes and sprinkles it with meal; they then cry out "Si!" ("Ready!"). The stick must not be touched with the hand after it is placed on the foot. It is often thrown a long distance, and no matter where it may rest it must be managed with the foot. There is nothing more exciting to the Zuñi, except the scalp dance, than this game of *tikwanē*. The equestrians urge their ponies onward to keep pace with the racers, who run southward over the road of the Gods of War for a distance, then around to the east, crossing the river. On they go, keeping to the foot-hills.¹ Recrossing the river several miles west of Zuñi, they bend around to the east, and return by the southern road to the base, when the members of the successful party vie with one another in reaching the great plaza, for he who is first to pass around the heap of wagered articles is the hero of the hour. As they run around this pool they extend their hands toward it and, bringing them to their mouths, draw in a breath and pass on to the house of the manager whence they started, where the victor deposits the *tikwanē* of his side in a basket of prayer-meal, while all present make offerings of bits of precious beads in the basket.

The wife of the Shiwanni takes the hands of the victor and, standing, brings her clasped hands four times before his mouth. Each time he draws a breath. The waving of the hands four times is repeated before each runner, who draws as many breaths.

After the prayers the victor empties the contents of the basket,

¹ There are six stone-heaps which direct the runners in their course. These monuments, which are some four feet high, are supposed to have been made by direction of the Gods of War and are distinct from those made by men and women who whirl a stone or bit of wood around the head in the left hand, from left to right, four times, and throw it over the shoulder on to the heap, that the fatigue which would otherwise come to the body may be cast into the stone or chip. The words expressed are "*Hlon yútē'chi hānasima Anatu*" (This place tired, unlucky, be settled). These mounds are supposed to have been begun by the Gods of War. Vases containing medicine of these gods are believed to be buried beneath the mounds, though these objects are too sacred to be commonly referred to.

which includes the meal and bead offerings and the *tikwanē*, into a corn-husk, and carries it to his home. After each runner returns to his home he drinks a quantity of warm water as an emetic, and when relieved he retires for the night. It is not uncommon for a runner to be so affected by the race that the manipulations of a masseuse (the Zuñi are experts in this practice) are necessary to restore him. The following morning the head of each runner is washed in yucca suds, and he bathes. After the morning meal the *tikwanē* of the Elder God of War is deposited, with the contents of the corn-husk carried by the runner from his manager's house, at a shrine on Úhana-yāl'lannē (Wool mountain), while the *tikwanē* of the younger God of War and the other offerings are deposited on Tówa-yāl'lannē (Corn mountain).

The most prominent religious positions do not debar men from taking part in these betting races. One of the fleetest as well as most enthusiastic runners of the present time is the *kómosona* (director general) of the *kiwi'siwc*.

There are many informal games of *tikwanē* in which young men hurriedly gather for sport, and sometimes a considerable stake is raised. One race observed by the writer, in which great enthusiasm was exhibited, began at five o'clock in the afternoon, the parties returning after seven. There were three racers on a side, the *kómosona* being one, but he lost on this occasion.

While there is much betting and considerable interest is manifested in these informal races, there is no ceremony associated with them. Each runner bets on his side. Outside parties bet with one another, one holding the stakes; or more frequently a third party has charge of the stakes, which are heaped in the large plaza. Sometimes the articles are afterward carried to the *kiwi'sina* to which the successful party belongs, while again they pass to the winner in the plaza, he in turn dividing the profits among the runners of his side. While much interest prevails at the informal races, and great enjoyment is derived from them, the excitement is as nothing compared with that of the more formal affairs.

It is interesting to see the very young boys in their foot-races (plate XLVIII) and to observe how closely they follow their elders in the rules governing the stakes. Wagers are always made,

as the races would be of little interest to the younger boys without the element of chance associated with them.

Beginning at so early an age, there is no wonder that these people develop into the swiftest of runners. The writer has never known the Zuñi to lose a foot-race with other Indians, nor with the champion runners of the troops at Fort Wingate, who sometimes enter into races with them. It is quite common for the Zuñi and Navaho to race. Though these races are always informal, the stakes are often large, and the Navaho leave their precious beads, silver belts, bridles, and valuable blankets behind when they depart from the pueblo. Their love for gambling prevents them from learning lessons from sad experiences.

SHÓLIWE. (ARROW REEDS.)

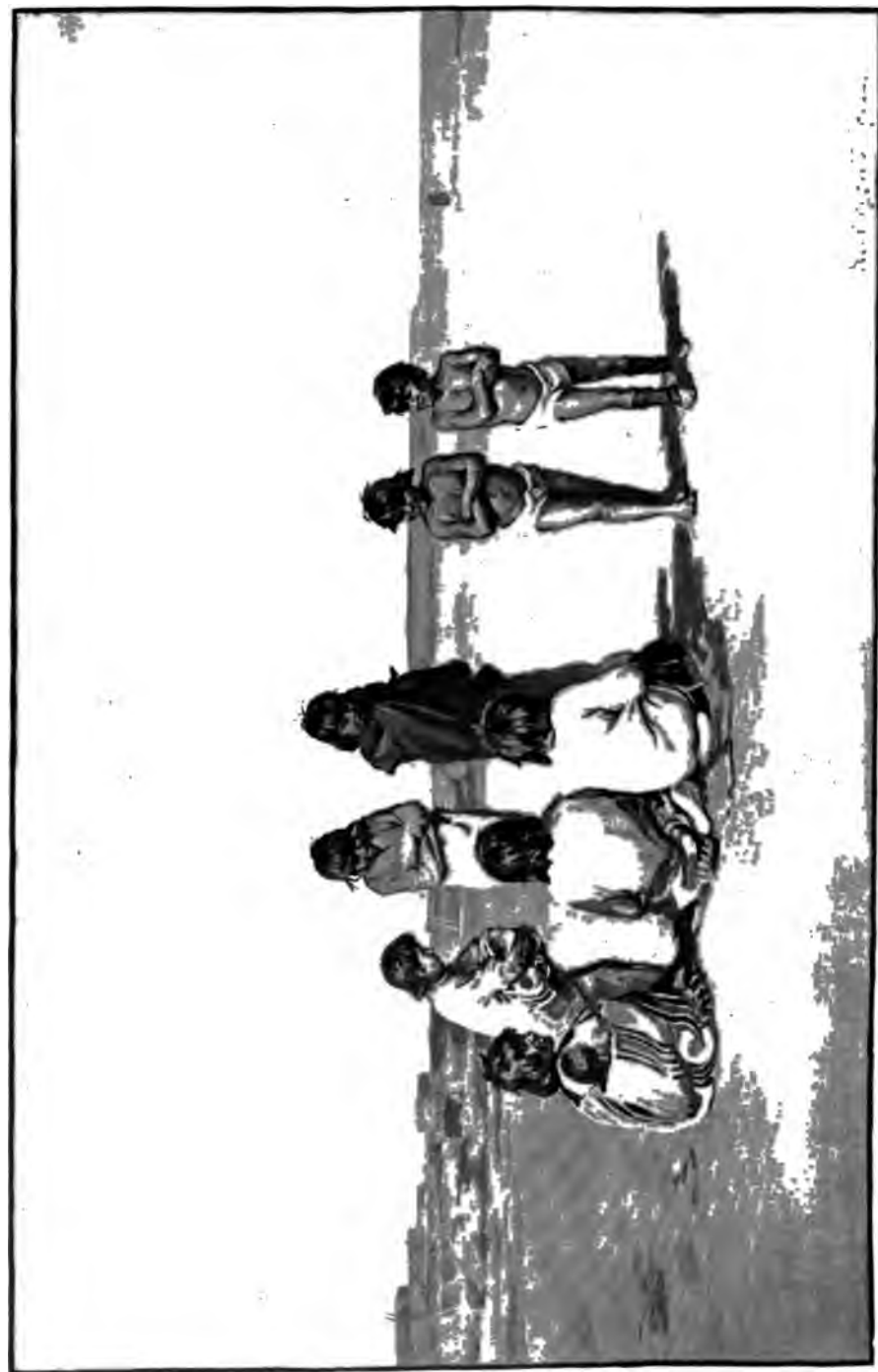
Implements. — Four split reeds, measured from the tip of the thumb to the tip of the middle finger, the fingers being extended; a bowl-shaped basket, a buckskin, a blanket, bits of pith or the central core of a corn-cob, straws for counters, and chips (usually silver buttons).

The lot game of *shóliwe* is second on the list of the games of the Gods of War, and is the great gambling game of the Zuñi. Legend says that it was played for rains by the Gods of War and the Ah'shiwanni soon after coming to this world. The Ah'shiwanni afterward thought the reeds used for the game were too long, so their length was measured from the tip of the thumb to the tip of the middle finger, the fingers extended.

The Ah'shiwanni considered this game so efficacious in bringing rains that they organized a fraternity, which they called Shówekwe (Arrow-reed people), while the Ah'shiwi were at Hān'hlipIn'ka, for the express purpose of playing the game for rain. Ten men were designated by the Ah'shiwanni as the original members of the Shówekwe. The prayers of this fraternity were sure to bring rains.

When the Kok'ko (anthropomorphic gods), visited Ítiwanna ("Middle Place," the site of the present Zuñi), eight days succeeding the first appearance of 'Kāk'lo¹ (an anthropomorphic god) in Ítiwanna, certain ancestral gods gathered in the ceremonial chamber

¹ 'Kāk'lo is described in the forthcoming *Esoteric and Exoteric Life of the Zuñi*.



Indians of the Amazon River, Brazil.

of the 'kákwemosi (high priest) where the first body of Ah'shiwanni (Rain-priests), the Néwekwe (Galaxy) fraternity, and the ten members of the Shówekwe were assembled. The Kóyemshi at this time gave their songs and prayers to the fraternities present, after which the Néwekwe and Shówekwe alternated annually in personating the Kóyemshi.

The Má'ke 'hlánnakwe (Great Fire) and 'Kóshi'kwe (Cactus) fraternities are more recent adjuncts to the personators of the Kóyemshi. The four fraternities now in turn personate these gods; at least such was the case until the Shówekwe became so degenerated that the *mósona* (director) of the fraternity preferred to choose the personators of the Kóyemshi from the fraternities at large rather than to call on the men of his own fraternity. In fact, the fraternity as it was no longer exists, it having retrograded into a body of professional gamblers which bears no relation whatever to the body organized by the Ah'shiwanni; but the game is played by the Ah'shiwanni and others, in all sacredness, for rain.

The reeds used for ceremonial occasions are rarely brought out at other times. Such reeds are old and are preserved with care, and it is considered a great privilege when one having lost heavily may secure a ceremonial set of *shóliwe* through which to recover his possessions.

The following was related to the writer by a young man, a nephew of a Shiwanni:

"I gambled with *shóliwe* (new ones), and lost beads, blankets, and other things, and in my distress I went to my uncle's house, where an original set of *shóliwe* belonging to the Younger Gods of War is kept. I told him of my trouble and begged him to let me have the precious reeds to play with, in order to win back my valuable articles. I visited my uncle's house the night of the day I lost my things. It was in the month of May. He said, 'Come to me at the winter solstice.' I did as he bade me, going to him at night. He gave me the *shóliwe* and the *klémtutunini* (rhombus), and two *télikyinarwe* which he had prepared for me, the sticks being the length of the middle finger measured on the under side. They were pointed at one end and colored black. A turkey-leg feather, a duck plume, and a wing-feather from each bird of the

six regions were attached pendent to each stick with native cotton cord, with several precious beads strung on the cord, the length of the cord from the stick to the plumes being measured by the four fingers crosswise. My uncle also gave me medicine, which was a



FIG. 14. — Split reeds used in *shóliwe*.

little black and a little white, to rub on my hands when I should be ready to play. It appeared like grease, but I do not know what it was. I spent the night with my uncle, while he taught me four old songs. He said, after I had learned the songs by heart, 'before you play the game, shut your mouth and sing the songs within your heart. After singing the songs once you may speak

with the man with whom you are to play, but you must again shut your mouth and sing the songs within your heart, and then you may play.'

"At sunrise the wife and the daughter of my uncle came into my room where my uncle and I had spent the night. The girl prepared a bowl of yucca suds and placed it immediately before me. I sat facing east and the wife stood behind me, placing a hand on either shoulder. The girl stood south of the bowl and faced it.

"When the suds were made they came and stood by me. My uncle was the first to dip two eagle plumes four times into the suds, each time drawing them forward over the top of my head. This was repeated by all present except the girl who prepared the suds. After the others had rubbed suds over my head with the plumes, she washed my hair thoroughly from the bowl, standing before me, and my uncle's wife rubbed my hair dry, while I was still in my seat. My uncle gave me four ears of corn—yellow, blue, red, and white—tied together, and enough calico for a shirt. He gave me the *télikyináwe* at the same time he gave me the game of *shóliwe* and the rhombus, before he taught me the songs. In giving me the corn and calico, he said, 'I give these to you that you may receive such things from the man with whom you play. Carry the *télikyináwe* a long distance to an arroyo where you find *débris* has collected from the running of water, and plant them to the Gods of War.' When I was within a few feet of the place I had selected for depositing my *télikyináwe*, I whirled my rhombus until I reached the spot where I planted them.

"I afterward returned the rhombus to my uncle, but kept the *shóliwe*¹ until the anniversary of the loss of my possession. [One must begin to play in the same month and on the same day of the month that the misfortune of loss occurred. Playing may be continued until the summer solstice, but no games must be played while the Ah'shiwanni are in retreat for rains. If success does not come to the player with the ceremonial reeds, he may ask for them another year and try his luck, in the meantime purifying his heart,

¹ It was the writer's good fortune to have two sets of ceremonial reeds presented to her by the elder- and the younger-brother Bow-priests. They are now in the National Museum.

for if the heart be good these reeds are believed to surely bring success.] I won back most of my lost articles, after which I returned the *shóliwe* to my uncle."

Each player takes the side of one of the Gods of War, two pieces of split reed representing the side of the elder God of War and two the younger God of War. The writer, for convenience, numbers the reeds 1, 2, 3, 4. (See figure 14.)

No. 1. Named *kwín'na* (black), has the concave side of the reed colored 'black, indicating morning, noon, and sunset, or the whole day. Three sets of lines on the convex side denote the three periods of the day — morning, noon, and sunset.

No. 2. *Áthluwa* (center), has a daub of black midway of the reed, concave side, denoting midday. The lines on the convex side also denote noon.

No. 3. *Kóhakiwa* (white shell), has a daub of black paint at either end of the concave side, indicating morning and evening, or sunrise and sunset. Lines on the convex side denote the same.

No. 4. *Pállu* (mark on the end), has a daub of black paint on the joint end of the concave side, denoting sunrise, which to the Zúñi is the first light of day, or the white light which comes first; and the lines on the convex side indicate the same. Three dots are sometimes found on the joint of the reed, indicating eyes and mouth of the face which is not delineated. Other reeds have only two dots for the eyes.

Nos. 1 and 3 are said to belong to the elder God of War, and Nos. 2 and 4 to the younger God of War. The player representing the elder god holds No. 3 concave side up, and slides No. 2 into the groove of No. 3, the joint of No. 2 falling below that of No. 3. He then slides No. 4 into that of No. 2, also allowing the joint to extend below. No. 1 is held crosswise, the others at an acute angle (the reeds are sometimes crossed at right angles), with the groove side against the corresponding sides of the others, the joint to the left, and the opposite end projecting a little more than an inch beyond the group (figure 15). When the representative of the younger God of War plays he runs No. 3 into the groove of No. 2, and No. 1 into No. 3, and crosses them with

No. 4. The reed which crosses the others is designated as the thrower, but the same reed, as stated, is not used by both players. In this position the reeds are thrown upward against an inverted basket, ten or twelve inches in diameter, covered with a piece of blanket or cloth and suspended from the ceiling. The reeds strike

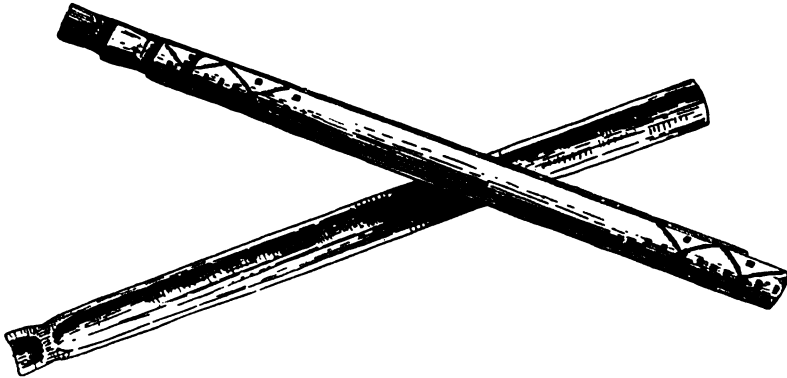


FIG. 15. — Method of placing reeds in playing *shóliwé*.

the cloth over the basket and fall to a blanket spread on the floor to receive them. If played out of doors, which is seldom the case at present, the basket is suspended above the blanket from the apex of three poles, arranged tripod fashion, with sufficient space beneath for the blanket and players.

When the representative of the elder God of War throws, and the concave side of No. 1 and the convex sides of the others are up, the trick is won; or if No. 1 be convex side up with the others concave up, the trick is won. If No. 1 crosses No. 3, or vice versa, convex sides up, the trick is won, even should one cross the other by but a hair's breadth. If Nos. 2 and 4 should be crossed as described, the trick goes to the opponent. If all convex sides are up, or vice versa, the trick is lost. If the convex side of No. 3 is up, and the others have the concave sides up, the trick belongs to the opponent.

When the representative of the younger God of War plays, the counts are reversed. Silver buttons are the favorite "chips" for the game.

Though *shóliwé* is the favorite of the lot games of the elder Ah'shiwi, it being the game of the professional gamblers¹ of the pueblo, there is no thought of personal gain when it is played by the Ah'shiwanni for rains.² At this time great ceremony is observed and buckskins are used in place of the cloth covering over the basket and the blanket on the floor. The skin on the floor has the head to the east; a broken circle forming a quadrant is drawn on the skin.

The gambling den of Zúñi was as notorious and was regarded with the same aversion as a place of similar character would be in civilization. The more profligate characters who depend upon gaming for their livelihood spent much of their time in this den, which was one of the old interior rooms of the pueblo. The room was reached by a ladder through a hatchway, and if the memory of the writer is correct (she failed to make a note of this particular point), the room was dimly lighted with a small window of selenite, near the ceiling. The hatchway was covered with a straw mat, upon which an eye was kept, that there might be no intruders.

The writer first visited this den in 1896. Her unannounced arrival was a surprise to the eight or ten men present, who appeared to be much annoyed; but when informed that she had come to observe the game and not to denounce them for their profligacy, a sigh of relief escaped them.

There is but little ceremony associated with the game when played by the professional or other gamblers. The most abandoned, however, would not dare to play without first offering prayers to the Gods of War, invoking their blessing, and breathing on their reeds. The professional gamblers show in their faces deep lines and other in-

¹ After an absence of six years the writer found, on her return in 1902, that the Zúñi gambling house was a thing of the past, and that the game of *shóliwé* was not nearly so frequently played as formerly, either ceremonially or for pure pleasure.

² The reader who has perused "Chess and Playing-cards," by Stewart Culin (*Report of the U. S. National Museum*, 1896), will note the difference between the explanation of *shóliwé* as found in that publication and that which is given here. For example: "Formerly *shóliwé* was exclusively a game of war divination and was played only by the Priests of the Bow and members of the esoteric society of the war shamans." According to Zúñi belief *shóliwé* was played by the Divine Ones (Gods of War) and the Ah'shiwanni for rain soon after they reached this world and long before the creation of the Bow priesthood.

dications of dissipation, although they lose no more rest than (perhaps not so much as) the Ah'shiwanni and the theurgists ; yet, aside from the anxiety associated with gaming as an almost perpetual pastime, the inveterate gamblers, like other people not altogether lost to a sense of right, must have the consciousness of doing wrong, while, on the other hand, the rain priests and theurgists have the satisfaction of realizing that they are propitiating their gods, not only for their own good but for the good of all — not only for their own people, but for all the world.

ÍĀNKOLO'WE

Implements. — Small stone disk, less than two inches in diameter, colored black on one side ; four cups, a ball and straws. "In the old, a grain of corn was used instead of the ball ;" and the corn is still used when the game is offered to the Gods of War.

The four cups are placed on their sides close together in a row, the openings to the east. The disk, ball, and bunch of straws are

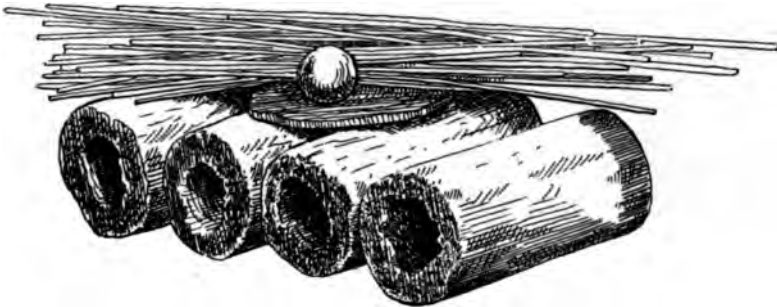


FIG. 16. — Implements used in *íĀnkolowe*.

laid on top of the cups (figure 16). This arrangement before playing the game is observed by all men of any standing in the tribe, "for it was so with the Gods of War."

Each party chooses a side of the disk before it is thrown. The side up designates the starter of the game, who represents the side of the elder God of War. He sits facing south and forms a square with the four cups before him. The ball is secreted in one of the cups.¹ The elder God of War always placed his cups in the form

¹ Although this game is common in other pueblos, the writer has not observed cups of the very dainty type elsewhere than in Zuñi. They are usually clumsy and unfinished.

of a square. The other party, who sits facing north, chooses from the cup nearest to him, taking the one to the west. If the chosen cup contains the ball he must pay ten straws to the starter, who again arranges the cups, and the cup to the east and in line nearest the chooser is taken. Should this cup not contain the ball, the chooser lays it with open end to the east and selects another cup. Should this cup contain the ball, he forfeits six straws, when the starter again arranges the cups. When a cup containing the ball is chosen, six straws must be paid. Should the first, second, and third cups selected be minus the ball, they are laid with the open ends to the east; the fourth cup, containing the ball, is allowed to stand, four straws are forfeited, and the cups are rearranged. Should the third cup chosen contain the ball, no payment is made and the arranging of the game passes to the other party, who represents the side of the younger God of War. He forms three points of a triangle with three cups and places the extra cup to the eastern point, "for so the younger God of War placed his game." When all the straws have passed to one party, the game, upon which heavy wagers are often made, is won.

HÄ'POÄNNĚ PÍHL'KWANÁWE

Implements.—Bow and arrows; an oval roll of green corn-husks.

Any number may play this game. A *hä'poännē* (roll of husks) is placed upon the ground and arrows are shot at it from a distance of forty or fifty feet (figure 17). The first player to strike the roll covers it with a mound of earth, very much larger than the roll itself, while the others turn their backs. The one who places the *hä'poännē* is almost sure to mark the exact location of it, hence he resorts to various devices to mislead the players. A favorite deception is to leave the mound low where the roll is actually buried, having it more elevated at some other point. The players aim to shoot their arrows into the *hä'poännē*, and the one who strikes wins the game. The winner draws the husk from beneath

The Zuñi, at least those who play the game according to the supposed teachings of the Gods of War, have their cups well cut and not more than three or four inches high. The cup is painted white and capped with black, each cup being tipped at the closed end with fluffy eagle plumes. The ball used is the size of a small marble.

the earth with the arrow. When the arrow strikes the mound but does not touch the *hā'poānnē*, it is removed by the one who secretes the object, and a second player shoots his arrow. Each player

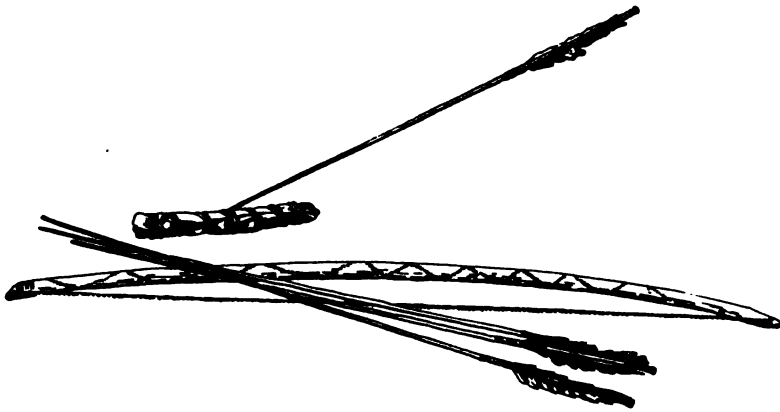


FIG. 17.—Implements used in *hā'poānnē pihl'kwānwē*.

takes his turn until the *hā'poānnē* is struck, the one having the arrangement of it being the last one to shoot, and he is naturally the most frequent winner. This game affords great amusement to the younger men.

SAIA'HLÄT'AWÉ. (HORNS KILL, OR KILLING THE RABBIT.)

Six goat-horns are placed in line on the ground an equal distance apart (figure 18), and the players stand some rods away. The



FIG. 18.—Implements used in *sata'hldt'awé*.

game is begun by a player starting to run and throwing a rabbit-stick toward the horns. He is entitled to as many horns as he strikes, and may continue to throw the stick as long as he is successful

in striking a horn ; but when he fails to strike one, another plays. The one who strikes the largest number of horns wins the game.¹

SHÓWIĀLTOWE

Shówiāltowe may be played by any number of persons, each one being provided with several arrows. Holding it between his index and middle finger and thumb, the first player throws an arrow a distance of some ten or twelve feet (figure 19). Then a second player

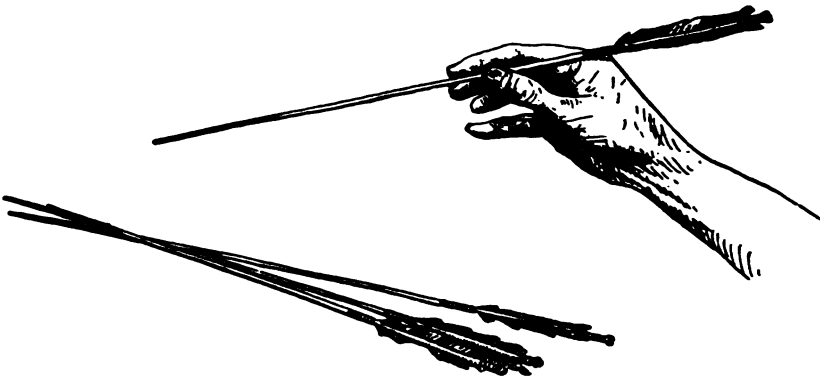


FIG. 19.—Method of holding arrow in playing *shówiāltowe*.

throws, aiming to have the feathers on his arrowshaft touch those of the one already on the ground. If he is successful he takes both arrows and makes another throw, when the next player aims at the arrow on the ground ; if he fails the arrows remain in place and another player throws ; and so on, each man taking the arrows which are touched by his own. Sometimes considerable dispute arises as to whether the feathers are really in contact, the men stooping and examining the arrows with the closest scrutiny.

If all the arrows fall apart, each player takes his own from the ground and a new game is begun. The taker of the full number of arrows wins the game.

LÁPOCHIWE

Implements.—Three pencil-like sticks ; three reeds the length of the sticks, one of them with a sharpened stick projecting ; and one longer reed (designated the chief) having a pointed stick attached

¹ Dr Walter Hough, of the National Museum, observed this game played by Indians in Mexico.

to the end. Two fluffy feathers are attached to each reed and stick¹ (figure 20).



FIG. 20.—Plumed sticks used in playing *lápochiwe*.

Three sometimes play with the number of reeds and sticks mentioned, but when more than two play it is usual to increase the number of sticks, although in the genuine game of the Gods of War the number cannot exceed seven.

The one proposing the game divides the six smaller reeds and sticks between his opponent and himself, and throws the "chief." The game is played like *shówiáltowe*, except that the players are seated and throw a comparatively short distance. *Lápochiwe* is one of the favorite indoor games.

HÓ¹KÄMONNĚ

Implements.—Two slender sticks, each passed through a piece of corn-cob. The stick is sharpened at one end and has

¹ The string tied to the second stick from the right in the figure has no significance.

two hawk plumes inserted in the other end. A ball of yucca ribbons (figure 21).

The yucca ball is placed on the ground and the sticks are thrown at it from a short distance. The ball must be penetrated. If the first player strikes the ball, the stick is allowed to remain in place

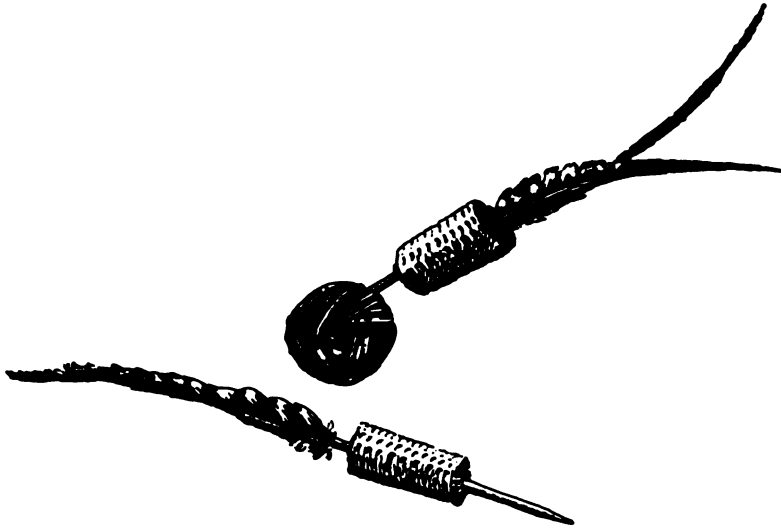


FIG. 21.—Implements used in *hō'kāmonnē*.

until the other party plays. If both sticks strike the ball, it is a draw. If the second stick fails to strike, it remains where it falls and the first player removes his stick from the ball and throws again. The one who strikes the ball the greater number of times wins the game.

Hō'kāmonnē is one of the most precious games of the Zūñi, it being among those offered to the Gods of War at the winter solstice. The game is frequently played for rains, and when it occurs in this connection sacred meal is sprinkled on the ground before the ball is placed; the one who first penetrates the ball lifts it by the stick, and, drawing a breath from it, offers thanks to the gods that the rains are soon to come.

PÓ'KIÄNNAWE, "JACKRABBITS HIT." (SHUTTLECOCK AND BATTLEDORE.)

Implements.—Corn-husks neatly interlaced into a square of about an inch and a half, with two delicate feathers projecting from the center (figure 22).

Pó'ki nānanē (pl. *pó'ki ānnáwē*) is so named because the sound produced by a shuttlecock coming in contact with the palm of the hand is similar to the noise of the tread of the jackrabbit upon frozen snow.



FIG. 22.—Implements used in *pó'ki nānanē*.

The game is played as frequently by the younger boys as by their elders, and always for stakes.

One bets that he can toss the shuttlecock a given number of times. While ten is the number specially associated with the game, the wagers are often made for twenty, fifty, and sometimes a hundred throws. In case of failure the other player tries his skill, each party alternating in the game until one or the other tosses the shuttlecock (only one hand being used) the given number of times, which entitles him to the game.

The Zuñi claim that this game originated with them.

¹SÍKON-YÁ'MUNĚ TÍKWANĚ

Implements.—Slender sticks the length of an arrowshaft, zig-zagged in black, symbolic of lightning; a ring, about two and a half inches in diameter, composed of yucca ribbons, and a *tíkwānē*¹ or racing stick (figure 23). (See the first game mentioned.)

This is a foot-race, run only by order of the Ah'wan tā'chu (Great Father) Kóyemshi, and is exclusively for rains.

¹ The *tíkwānē* is similar to the upper specimen in figure 13 and has no string around the middle as shown in figure 23.

A chosen number of women, each supplied with a stick, stand in line to the left of a number of men. The latter are provided with a *tikwanē*, which they kick; and the women who play against the men use a yucca ring, tossing it with their sticks. Though the distance covered is short the latter seldom win.

'*Sikon-yā' munt-tikwanē* is rarely played at the present time, and as the writer was not so fortunate as to observe the game, she cannot describe it in detail.

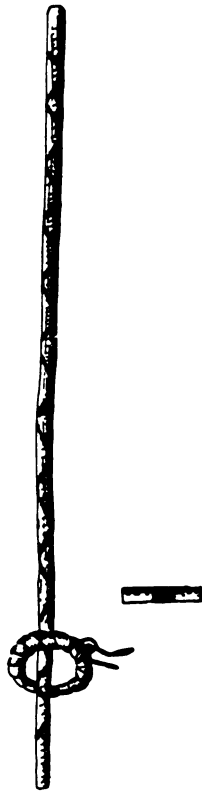
'KĀSH'TUWÍWI

Two files of men hold one another around the waist, the leaders of the two sides clasping hands, and in this position they jump about the plaza. At times the men separate and form into vis-a-vis lines, and, clasping hands, jump back and forth.

This game is played by the Kóyemshi and members of the Néwekwe fraternity between the dances of the personators of the anthropomorphic gods. It brings great delight to the spectators.

YĀCHONI 'SĀWA'KA. ("FULL-DRESS YOUNG MAN.")
"RING-AROUND-A-ROSY."

FIG. 23.—Implements used in *sikon-yā' munt tikwanē*.



This is one of the games played in the sacred plaza by the Kóyemshi and Néwekwe, between the dances. A circle is formed, the men clasping hands, with one in the middle, who aims to catch one of the others as they jump around. He is frequently whispered to as to whom to chose. When one is caught he takes his place within the circle and his predecessor leaves the game altogether. When the number is reduced to three, the amusement increases, and reaches its height when but two are left. These hop about, each on one foot; the one who first becomes exhausted joins his fellows, who are grouped on one side of the plaza, when the remaining one must hop to the group before placing his other foot on the ground in order to win the contest.

At times all the players hop on one foot, each endeavoring to outdo the others in remaining longest in the field.

During these games the Kóyemshi and Nékwe frequently indulge in jokes which are usually of a very innocent nature, but occasionally they are gross in the extreme.

PÓPONĚ. (WOOL-BAG OR BALL.)

This game is also played by the Kóyemshi and the Nékwe fraternity during the intermission of the dances.

Two sides are formed in line, and a man runs out from one side and turns his back to his opponents, one of whom advances and throws a small bag filled with wool. If he succeeds in striking the one who has his back turned, the latter must join the side of the one who strikes; but should the one endeavoring to strike be hit from the other side before he returns to his ranks, he must pass to his opponent's side.

These children of nature appear to derive as much real enjoyment from this game as the children of civilization do from their game of tag.

TÁ-SHOLIWE. (WOOD REEDS.)

Implements. — Three staves colored red or black on one side, white or uncolored on the other; forty small stones, a stone disk, straws or slender strips of wood.

The forty stones are laid in quadrants, with a disk in the center. Two to four generally play, but the number is not limited to four. The players sit in a circle. The staves are held vertically over the disk and thrown downward with force (plate XLIX). The three colored sides up entitle the player to move by ten of the stones. The three uncolored (including white) sides up give the player five moves. Two uncolored and one colored up give the player three moves; two colored and one uncolored entitle the player to two moves. The counters being moved in opposite directions sometimes meet, and when a player reaches a point already occupied by a counter, "he is killed" and must begin again at the starting point. The one first around the circle wins the game provided his count does not carry him beyond the starting point, in which event he must

continue going around until his counter reaches the doorway, or "spring," as the opening is often called.¹

PÓPONÉ 'KAP'NANÉ. ("BALL HIT.")

This game is the same as shinny or bandy, and is a favorite betting game. The ball is usually made of buckskin. The Zuñi claim that the game came from Mexico long ago.

TĀN'KALAWÉ

This is similar to quoits, and is played as frequently by young boys as by their elders. Any number may play, and groups of boys of all ages derive great pleasure from watching the game. The stakes are placed on a corn-cob (or sometimes on a stone) planted in the ground. The players throw a stone disk, aiming to strike a line marked on the ground. The one coming nearest it has the privilege of throwing first at the stake. If the corn-cob is knocked over and the disk remains by it, the thrower has another chance; if the disk goes beyond the corn-cob, he loses; if it falls short of the cob, he wins. This game also, the Zuñi claim, came from Mexico.

AWE 'HLÁCNAWE. ("STONES KILL.")

Implements.—A number of small stones (a different color for each side), and geometrical markings on a stone slab or on the ground.

There is no specified size for the "board," it being larger or smaller according to the number of angles. The stones are placed

¹ *Tāsholīwe* (*tāwe*, wood; *shōlīwe*, arrow reeds) is played extensively by the Zuñi, although the writer has never observed the more prominent men playing it. Notwithstanding the Zuñi claim that they adopted the game from the Navaho, the Sia Indians, who call it *wáshkasi*, regard it as one of their oldest games. Instead of the circle they form a square ten stones on a side. (See "The Sia," *Eleventh Annual Report of the Bureau of Ethnology*.) Dr E. B. Tylor, in his paper on "American Lot Games as Evidence of Asiatic Intercourse Before the Time of Columbus," refers at length to this game, giving a diagram of it as played by the Apache Indians, which is identical with the form of the game as played by the Zuñi. Mr Culin, in "Chess and Playing Cards," calls attention to a form of *tā-sholīwe* known as *tem-thla-nah-na-ta-sho-li-we*, "of all the regions wood-canes." The writer has not discovered any such form as described by Mr Culin, but a Zuñi will sometimes, when he wishes to play *shōlīwe*, refer to the canes as *tēm'tla nána shōlīwe*, literally "all grandfathers arrow-reeds," i. e., "reeds of our forefathers."

on all the intersections of the geometrical drawing except the central one. The first player moves to the center, where his "man" is jumped by his opponent. The stones may be moved in any direction so long as the lines are followed.¹

¹ The Zuñi also make the checker-board within a circle, and in this case they have the advantage of resorting to the periphery when cornered. Some of the older men of Zuñi declare that this game, when it came originally to Zuñi from Mexico, was played with one set of stones and a stick for the opposite side, and that the use of the double set of stones is an innovation of their own. The writer observed the Africans at the Buffalo Exposition, in 1901, play on a crude slab of wood marked in squares, each alternate square being colored black. This game was identical with the modern game of checkers, with the exception that twenty men are used on each side. One player, who spoke English well, told the writer that his people had always played the game, the board with them being marked by having alternate squares excavated on a heavy slab of wood. At this point the African became too excited over his success in capturing a king to make further explanation.

THE SO-CALLED "HOE-SHAPED IMPLEMENT"

By CLARENCE B. MOORE

In *The Wisconsin Archaeologist* for October, 1902, is an interesting paper on "The Stone Spud," by Mr Charles E. Brown, containing much valuable information relative to these curious implements.

As I have found, in place, in Florida, in Georgia, and in Alabama, a considerable number of what have been called "hoe-shaped implements" (Mr Brown's "Class C," among spuds, though he differentiates their uses from those of the other two classes), I have thought a description of these "implements" found by me might be of interest.

The only "hoe-shaped implement" I have met with in peninsular Florida came from a mound near Duval's Landing, Lake county. It is of polished trap-rock and has a perforation in the upper part of the blade.¹

Another "implement," of calcareous sandstone, very soft and greatly weathered around the edge, has a perforation. This was found in an aboriginal cemetery near Point Washington, Washington county, northern Florida.²

An "implement" of friable calcareous rock, with a perforation, came from a mound near Lake Bluff, Altamaha river, Liberty county, Georgia.³

A neatly made specimen wrought from hard rock, with a perforation, lay on the chest of a skeleton, in the aboriginal cemetery at Durand's Bend, Alabama river, Dallas county, Alabama.⁴

¹ "Certain Sand Mounds of the St. Johns River, Florida," part 1, by Clarence B. Moore, p. 39, fig. 20; *Journal of the Academy of Natural Sciences of Philadelphia*, vol. x.

² "Certain Aboriginal Remains of the Northwest Florida Coast," part 1, p. 473; *Journ. Acad. Nat. Sci. Phila.*, vol. xi.

³ "Certain Aboriginal Mounds of the Altamaha River," p. 176; *Journ. Acad. Nat. Sci. Phila.*, vol. xi.

⁴ "Certain Aboriginal Remains of the Alabama River," p. 308; *Journ. Acad. Nat. Sci. Phila.*, vol. xi.

Three of these "implements," all beautifully made of hard stone, all with perforations, came from a mound on the "Charlotte Thompson place," near Montgomery, Alabama. One of these specimens clearly bears the marks left by a handle, as shown in figure 24. The shank has projected beyond the handle on one side; on the other side the line of the handle passes across the top of the perforation. Another "implement" has similar traces of a handle which are less distinctly marked.

A fourth specimen from this mound is the upper part of a "hoe-shaped implement," perforated, made from an exceedingly soft, clayey

rock found along the banks of the Alabama river.¹

Three of these "implements," all of hard stone, none perforated, came from the mound in the "Thirty Acre Field," near Big Eddy Landing, Alabama river, Montgomery county, Alabama. Two are of the ordinary shape. One is an uncommon type, though this type is included in Mr Brown's paper. This implement (figure 25) is shown full size in my report, where the mark left by a handle is clearly seen in the half-tone representation of the object. An interesting feature is that marks made by a drill, probably a reed, since the nucleus of a core is apparent, are plainly visible on the implement. Seemingly the endeavor to perforate the shank was abandoned after several attempts. The line left by one side of

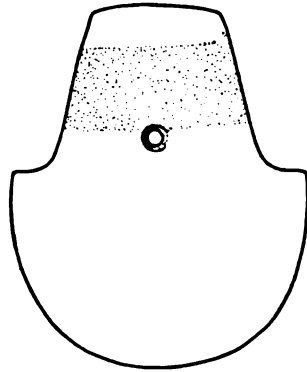


FIG. 24. — "Hoe-shaped implement," showing mark made by handle. Alabama. (One-third natural size.)

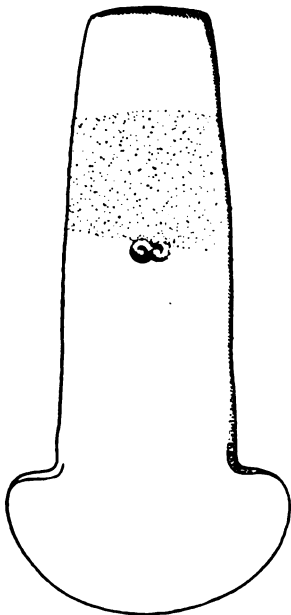


FIG. 25. — "Hoe-shaped implement," showing mark made by handle. Alabama. (One-third natural size.)

¹ "Certain Aboriginal Remains of the Alabama River," op. cit., p. 326.

the handle is just above where the perforation was to have been.¹

From the mound on the "Charlotte Thompson place" there came also a beautiful pendant of hard stone, two and six tenths inches long and two inches across the blade, in the form of a "hoe-shaped implement," shown full size in figure 26. It will be re-

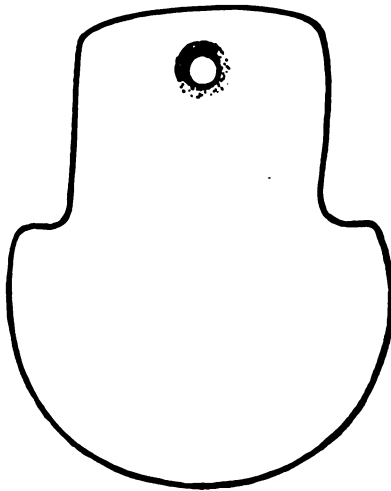


FIG. 26. — Pendant ornament. Alabama. (Full size.)

marked that in this case the perforation is in the upper end of the shank.²

From these twelve specimens the following conclusions are, at least, suggested.

From the soft character of the stones from which some of these "implements" are made, it would not seem that they were intended for active use.

As some are not pierced and as others have the hole too low on the shank to allow graceful suspension, it does not seem likely that these objects were used as ornaments or that the

hole was intended for attachment to the person.

Inasmuch as on some of these, marks left by a handle are plainly discernible, probably all were used with handles, some of which left no trace. On certain "celts" also one plainly sees where handles have been, but more frequently no marks are apparent.

Presumably, then, the "hoe-shaped implement" was an axe and, as it was not intended for active use, it was a ceremonial axe, as I have maintained in previous writings; and the hole, when it existed, was to lash the blade more firmly to the handle. Perhaps, where the hole is not present, the blade was used without one, since the hole is not indispensable; or just as likely an unfinished object was buried with the dead. The discovery of cases of this kind abound in mound work.

¹ Ibid., p. 341, fig. 60.

² Ibid., p. 326, fig. 47.

In his paper Mr Brown quotes Dr J. F. Snyder, the well-known authority, as follows: "In the study of prehistoric American Indians I am inclined to think our natural propensity to magnify the mysterious and incomprehensible leads us often to ascribe religious or ceremonial motives to commonplace mechanical objects."

It is possible that too large a number of objects has been classed as ceremonial, but we should bear in mind that Indian customs of the present time are replete with dances and ceremonies in which ceremonial objects are largely used, and there is no reason to believe that these customs were any less in vogue in the past. As the customs of aborigines have a strong similarity the world over, a representation is given here (figure 27) of an implement from the Cook islands, in the South Pacific ocean,¹ in possession of the Academy of Natural Sciences of Philadelphia. This implement, with a well-made blade of stone and a handle thirty-two inches in length, is labeled as being a "ceremonial adze," and it surely can have been intended for no other purpose, as the handle, carved through and through in every direction, could withstand no blow of importance.

But we are not compelled to draw conclusions as to ceremonial implements from comparatively modern ones.

Last October, while the members of the Congress of Americanists were in this country, I had the pleasure of meeting, among others, Prof. Juan B. Ambrosetti of Buenos Aires, who told me how greatly struck he was with the similarity of many of our archeological specimens to those of Argentina.

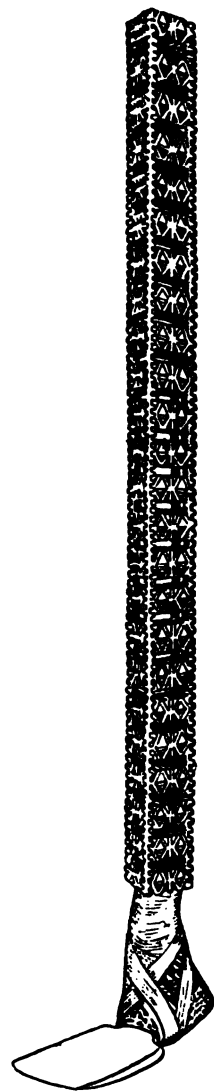


FIG. 27. — Ceremonial adze from Cook islands. (One-sixth natural size.)

¹ Ceremonial adzes from the Marquesas islands, with handles "fairly honeycombed with carvings," are in the National Museum at Washington. See "Savage Weapons at the Centennial Exhibition," *Smithsonian Report*, 1879, p. 240. In this memoir a 'hoe-shaped implement' from Louisiana is figured, and described as an "implement."

It is interesting to see in Professor Ambrose

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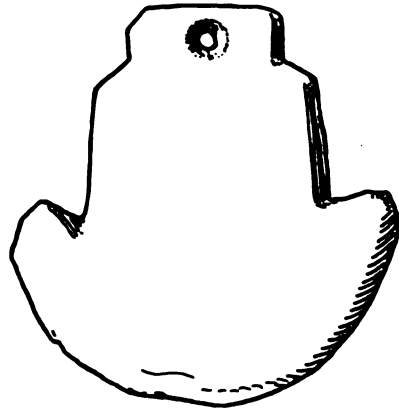


FIG. 28. — Ceremonial axe. Argentina.
 (One-third natural size.)

is evenly ground and shows no
 chipping or wear. The weapon
 is evidently a ceremonial one.

This interesting specimen
 came from the mouth of the
 Barina river, British Guiana.

Doctor Dorsey, in his
*"Archæological Investigations
 on the Island of La Plata,
 Ecuador,"* shows a beautiful
 "ceremonial stone axe," 19.5
 inches in length.

From all this the reader
 will see that the use of cere-
 monial axes was widely spread
 and may judge that, presum-
 ably, among the aborigines of
 what is now the United States the ceremonial a:



FIG. 29. — C
 Guiana. (On

¹ "Las Grandes Hachas Ceremoniales de Patagonia," por
 ales del Museo Nacional de Buenos Aires, 1903.

TRACES OF ABORIGINAL OPERATIONS IN AN IRON MINE NEAR LESLIE, MISSOURI

By W. H. HOLMES

Early in April, 1903, a communication was received by the Bureau of American Ethnology from Dr S. W. Cox, of Cuba, Missouri, stating that evidences of ancient mining operations had been discovered in an iron mine operated by him near Leslie, Franklin county. This report was confirmed by Mr D. I. Bushnell and other St Louis archeologists, and the present writer, who is especially interested in the quarrying and mining industries of the aborigines, repaired at once to Leslie to make a study of the interesting phenomena.

It was found that the miners had encountered a body of iron ore, of unknown depth and horizontal extent, lying immediately beneath the surface of the soil on a gentle slope reaching down to the banks of Big creek, a branch of Bourbois river, and that they had removed the ore from a space about a hundred feet wide, one hundred and fifty feet long, and to a depth at the deepest part of between fifteen and twenty feet. In beginning the work traces of ancient excavations were observed, penetrating the soil which covered the surface of the ore body to a depth of from one to five feet; and as the work progressed it was found that the ore had been fairly honeycombed by the ancient people, the passage-ways extending even below the present floor of the mine. There were many partially filled galleries, generally narrow and sinuous; but now and then larger openings appeared, two of these being of sufficient dimensions to accommodate standing workmen.

In the débris of the old excavations many rude stone implements were encountered, and upward of a thousand of these had been gathered by the miners into a heap on the margin of the mine. These sledges are exceedingly rude, consisting of hard masses of stone or hematite weighing from one to five pounds, and roughly grooved, or notched, for the attachment of withe handles. The

great number of these implements made it certain that extensive operations had been carried on by the ancients, but the exact nature of the work was not readily determinable. The first impression was that the compact masses of hematite were sought for the purpose of manufacturing implements such as were employed by the mound-building tribes in many parts of the Mississippi valley ; but examination revealed few traces of the shaping of this material, save that it had been used in making the rude sledge-heads or hammers found in the mine. In breaking up the ore the white miners encountered small irregular seams and masses of flint, but these were too limited in extent and too brittle in texture to have been employed successfully in the manufacture of implements. Some workable flint was observed in the vicinity of the ore-body, and flakes and rejectage of blade-making, as well as a number of well-finished spearheads, arrowpoints, and leaf-shaped blades were intermingled in the filling of some of the superficial pits ; but this flint-shaping appears to have been an incident only of the work on the site. The evidences of this shaping work are not sufficient to warrant the conclusion that the extensive tunneling was carried on for the purpose of obtaining material for that purpose. Besides, this flint is found in large bodies in many sections of the general region, and could readily be obtained in quantity.

It was observed, in approaching the mine, that the exposed surfaces of the ore and the ground about were everywhere a brilliant red. The workmen were red from head to foot, and anyone venturing to handle the ore soon found his hands smeared with red oxide, repeated washing being required to remove it. The prevalence of the red color suggested at once the idea that the site had been an aboriginal paint mine, and that the red and yellow oxides were mined and carried away to be used as paint — an article of utmost importance in the aboriginal economy.

As the charges of dynamite used by the miners broke down the walls of the mine, it was observed that the deposits were of irregular hardness, that certain portions of the ore were very compact and flinty, containing much quartz, and of dark bluish or purplish hue, while the larger portion was so highly oxidized as to be easily broken up. Extending through the ore body in all directions were



FIGURE 1. RECOVERED FACE OF AN IRON MINERAL. PHOTOGRAPHED BY N. S. AND J. H. HALL, 1904.

pockets and seams of soft red and yellow oxides, and in places there were irregular openings and partially filled cavities. Two of these openings are shown in plate L, a view of the face of the mine taken by Mr Clark McAdams of St Louis. The miners would drill with great difficulty through the hardest of ore, to have the drill drop suddenly into a cavity of unknown depth. It was difficult to discover just which of these openings and cavities were artificial, or whether or not they had been penetrated by the ancient workers, as changes

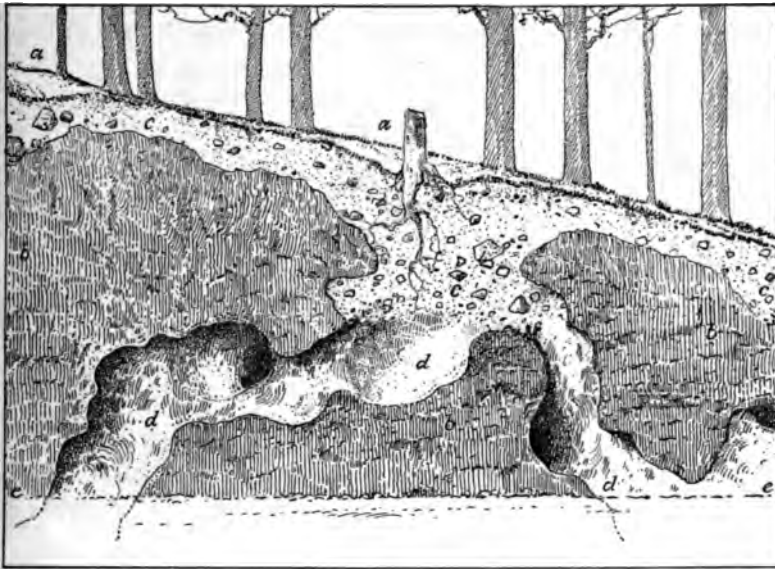


FIG. 30.—Section indicating the manner in which the galleries or borings penetrate the ore-body. (*a*, *a*, Surface traces of ancient pits. *b*, Ore-body. *c*, Filling of excavations. *d*, Borings of the ancient miners. *e*, Floor of mine.)

are constantly taking place in such ore-bodies. Percolating waters fill up or clear out the passage-ways. Generally, however, as the walls were broken down the openings were found to connect with the superficial pittings, as indicated in figure 30.

It appears certain that the larger openings and tunnels in which the sledges were found had been opened up or enlarged by the ancient miners, and that in the search for other bodies of the desired product they had followed weak lines and partially filled passage-ways, removing the projecting masses of hard ore, where these

interfered with the work, by means of the sledges. Sketches of these rude implements are shown in figure 31. It is apparent that the sledges could have had no other function than that of crushing and breaking up the solid masses of ore to be used in the manufacture of implements, or in opening new passage-ways through the ore-body. Although these sledges were made in the main of compact bits of the ore and of the flinty masses associated with it, they correspond very closely in general characteristics with the boulder sledges used in such great numbers in the copper mines of Lake Superior. Nearly all appear to have been hafted for use, and the

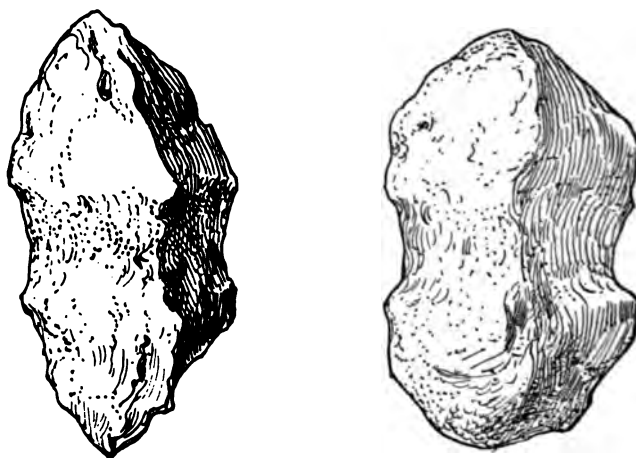


FIG. 31.—Sketches of the rudely shaped mining implements.

majority show the rude grooving or notching necessary for the attachment of the withe haft. It would seem that in the narrow passages of the mine the use of hafted implements would be inconvenient if not entirely impracticable, and we are left to marvel at the feat accomplished of penetrating a compact ore-body in dark, sinuous passages hardly roomy enough to admit the body of a man, with the aid of rude bits of stone held in the hand. The character of these openings is indicated clearly in plate I, which shows the face of the mine as freshly exposed by the mining operations; and figure 30 indicates somewhat imperfectly the manner in which the tunnels or borings penetrate the ore body connecting with the su-

perforated pits and extending to unknown depths beneath the present floor of the mine.

Numerous examples of the implements found and specimens of the ore in its various phases, together with a large mass of the compact ore, one surface of which shows the markings of the mining tools of the aborigines, were presented to the National Museum by the proprietor of the mine, Dr S. W. Cox.

I have now examined mines and quarries of the aborigines in twelve distinct materials, and each new example has added to my former high estimate of the enterprise and perseverance of the native peoples when engaged in the pursuit of their normal industries.

THE CHAMORRO LANGUAGE OF GUAM — II

By WILLIAM EDWIN SAFFORD

V. POSSESSIVES

1. TWO METHODS OF INDICATING POSSESSION. — In the Chamorro language possession may be indicated in two ways : (1) by suffixing possessive pronouns enclitically to the noun, as with nouns expressing relationship or the names of the parts of the body ; (2) by distinct words which may be called *independent possessives*, to which the possessive pronouns are added in the same way as to nouns. These are used with the names of inanimate objects and of animals.

2. POSSESSIVE SUFFIXES. — The use of possessive suffixes with nouns expressing relationship has been shown on page 303. In the same way these suffixes are combined enclitically with the names of the parts of the body. Examples :

	<i>Singular</i>	
1st person	-ho or -ko,	my ;
2d person	-mo,	thy ;
3d person	-ña,	his, her, its.
	<i>Plural</i>	
1st person (inclusive)	-ta,	our (yours and mine) ;
1st person (exclusive)	-mame,	our (theirs and mine) ;
2d person	-miyo,	your ;
3d person	-ñiha,	their.

This method of using the possessive pronouns shows the relationship of the Chamorro with the Malayan and Melanesian languages, as well as to the allied Philippine dialects. In the Malayan, for instance, we have *ku*, *mu*, *ña*, corresponding to the Chamorro *ko*, *mo*, *ña*. In Melanesia the corresponding possessive pronouns are suffixed only to nouns of a certain class. In the Malay they are suffixed to nouns without any distinction of class, though in

colloquial usage the third person *ña* alone is common. In the Philippine dialects independent possessives may be used with nouns expressing relationships, as *ang aquing amá*, "my father." In the Polynesian corresponding particles are suffixed to roots to form possessive pronouns, but they are not suffixed to nouns. In the Chamorro these suffixes must be used with nouns expressing relationship and with the names of the parts of the body; they may however be used with the names of inanimate objects, but they cannot be used with the names of living animals. In this particular, then, the Chamorro agrees with the Melanesian and not with the Malay, Philippine, or Polynesian. In the language of the Marshall group there are suffixes to nouns of a certain class as in the Melanesian, but the resemblance of the Chamorro with the Micronesian dialects is more remote than with the Melanesian.¹

On several islands of the Solomon group the dialects spoken by the natives have possessive suffixes almost identical with those of the Chamorro.² In the New Hebrides group the resemblance of the dialects in this particular is also striking. In the Philippines it is not so close. In the following table a comparison is made between the Chamorro possessive suffixes and those of the Ngao and Bugotu dialects of Ysabel island of the Solomon group, those of Fate and Oba, or Lepers island, of the New Hebrides group, and the Tagalog of the Philippine group.

ENGLISH	GUAM	SOLOMON ISLANDS		NEW HEBRIDES		PHILIP- PINES
	CHAMORRO	NGAO	BUGOTU	Oba	FATE	TAGALOG
my	<i>ho, ko</i>	<i>ngu</i>	<i>ngu</i>	<i>gu</i>	<i>gu</i>	<i>ko</i>
thy	<i>mo</i>	<i>mu, u</i>	<i>mu</i>	<i>mu, m ;</i>	<i>ma</i>	<i>mo</i>
his, her	<i>ña</i>	<i>ña, a</i>	<i>ña</i>	<i>na, ne, n ;</i>	<i>na</i>	<i>niyá</i>
our (incl.)	<i>ta</i>	<i>da, da tati</i>	<i>da</i>	<i>da, de</i>	<i>gita</i>	<i>nátin</i>
our (excl.)	<i>mame</i>	<i>mami, mi, gati</i>	<i>mami</i>	<i>mai, mei</i>	<i>gami</i>	<i>námin</i>
your	<i>miyo</i>	<i>miu</i>	<i>miu</i>	<i>miu</i>	<i>mu</i>	<i>ninyó</i>
their	<i>ñiha</i>	<i>ra, di</i>	<i>dia</i>	<i>ra, re</i>	<i>ra</i>	<i>nilá</i>

In expressing relationship or possession a noun with the possessive suffixed is usually preceded by the definite article, as in the Italian

¹ Codrington, R. H., *The Melanesian Languages*, Oxford, 1885, p. 126.

² This is also true of the interrogatives, as we shall see later.

il padre mio, and the tonic vowel is modified as explained on page 294.

<i>táta</i> , father ;	<i>tómo</i> , knee ;
<i>i tātáho</i> , my father ;	<i>i temóko</i> , my knee ;
<i>i tātá'mo</i> , thy father ;	<i>i temómo</i> , thy knee ;
<i>i tātáña</i> , his father ;	<i>i temóna</i> , his knee ;
<i>i tātáta</i> , our father ; ¹	<i>i temóta</i> , our knee ;
<i>i tātánmáme</i> , our father ; ²	<i>i temonmáme</i> , our knee ;
<i>i tātánmiyo</i> , your father ;	<i>i temonmiyo</i> , your knee ;
<i>i tātánñiha</i> , their father ;	<i>i temonñiha</i> , their knee.

From the above examples it will be seen that when the possessive is added it forms a new word with the noun and the accent of the primitive word is shifted so as to fall on the penult.

The Suffix ko. — *Ko* is used instead of *ho*, with a word ending in a simple short vowel, a diphthong, or a vowel preceded by two consonants ; as *chótáda*, 'banana-plant,' *i chetdáko*, 'my banana-plant' ; *dóga*, 'sandal,' *i degáko*, 'my sandal' ; *i guelòko*, 'my grandfather.'

The Connective n. — As with a noun followed by a genitive (page 304) a word ending in a pure vowel (not a guttural) takes *n* after it before the plural suffixes *mame*, *miyo*, *ñiha*. This may be considered akin to the preposition "of" ; and *i tātánmame* may be thought of as 'the father-of-ours.'

3. INDEPENDENT POSSESSIVES. — These are words formed of a root to which the possessive suffixes are added. They may be used as adjectives with nouns ; or they may be used as pronouns independently.

<i>iyoko na guma</i> , my house ;	<i>iyoko pat iyomo</i> , mine or thine ;
<i>iyomo na sêszê</i> , thy knife ;	<i>iyofia yan iyota</i> , his and ours ;
<i>gâho na manog</i> , my fowl ;	<i>gâho i manog</i> , mine (is) the fowl ;
<i>gâña na³ babue</i> , his pig ;	<i>gâta i karabao</i> , ours (is) the carabao.

¹ First person inclusive, signifying 'your father and mine,' as when brothers are speaking together.

² First person exclusive, signifying 'our father, not yours,' as in speaking to any one other than a brother or sister.

³ The connective particle *na* is used to join a noun and its adjective ; it is not translatable.

Possessive used with Inanimate Objects. — With inanimate objects the possessive root **iyō** is used combined with the regular possessive suffixes. This root may be considered as a noun signifying 'belonging,' since it occurs in Chamorro independently of the possessive pronouns, in such words as **iyon-langit**, 'belonging of heaven,' celestial, or heavenly; **iyon-tasi**, 'belonging of the sea,' marine; **iyon-tano**, 'belonging of the earth,' terrestrial; **iyon-guma**, 'belonging of the house,' domestic.

Possessive used with Living Animals. — To express the ownership of animals the root **gâ** is used, combined with the regular possessive suffixes. This particle may possibly be derived from *gâgâ*, the Chamorro word for 'animal.' Examples :

	<i>Singular</i>		
	WITH INANIMATE OBJECTS	WITH ANIMALS	
1st person,	iyoko ,	gâho ,	my or mine ;
2d person,	iyomo ,	gâmo ,	thy or thine ;
3d person,	iyofia ,	gâfia ,	his, her or hers.

	<i>Plural</i>		
1st person (incl.),	iyota ,	gâta ,	our (yours and mine);
1st person (excl.),	iyonmame ,	gâmame ,	our (ours not yours);
2d person,	iyonmiyo ,	gâmiyo ,	your or yours ;
3d person,	iyonfiha ,	gâfiha ,	their or theirs.

Possessives as Adjectives. — Following are examples of possessives used as adjectives :

iyoko na guma , my house ;	i gâho na galago , my dog ;
iyoma na sêsê , thy knife ;	i gâmo na manog , thy fowl ;
iyofia na tuhong , his hat ;	i gâfia na babue , his pig ;
iyota na tupô , our well ;	i gâta na karabao , our buffalo ;
iyonmame na lebblo , our book ;	i gâmame na nobiyo , our ox ;
iyonmiyo na lamasa , our table ;	i gâmiyo na chiba , your goat ;
iyonfiha na guaot , their staircase ;	i gâfiha na ngânga , their duck.

The possessives do not vary with gender or number of the nouns they modify. Where the plural is formed regularly by the use of the word *siha*, this may precede or follow the noun ; as 'his houses,' **iyofia na guma siha**, or **iyofia siha na guma**.

Inanimate objects may take the possessive suffixes to express possession, as *i gimaho*, 'my house,' etc.; but with the names of animals the suffixes cannot be used.

Possessives as Pronouns.—The following are examples of possessives as pronouns :

Iyoko i gima, mine (is) ¹ the house ; the house is my belonging ;
Iyomo i sēsē, thine (is) the knife ; the knife is thy belonging ;
Iyoña i tihong, his (is) the hat ; the hat is his belonging ;
Iyota i tipō, ours (is) the well ; the well is yours and mine ;
Iyonmame i lebblo, ours (is) the book ; the book is ours not yours ;
Iyonmiyo i lamasa, yours (is) the table ; the table is your belonging ;
Iyonñiha i guaot, theirs (is) the staircase ; the staircase is theirs.

In the same way we have *gāmo i babue*, 'thine the pig,' 'the pig is thy animal' ; *gāña i manog siha*, 'the chickens are his' ; *gāmiyo i nobiyo*, 'the ox is yours' ; *gāñiha i chiba siha*, 'the goats are theirs.'

4. POSSESSIVE SUFFIXES WITH ADVERBS. — In expressing relative position or direction from a person or object the Chamorros make use of an adverb or adverbial noun followed by a possessive suffix. This corresponds to the use in English of such expressions as 'on my right,' 'on thy left,' 'to my eastward,' 'in our rear,' 'on its outside,' etc. Examples :

<i>lago</i> , north ;	<i>i lāgo^{ho}</i> , my northward, on my north ;
<i>haya</i> , south ;	<i>i hāyamo</i> , thy southward, south of thee ;
<i>katan</i> , east ;	<i>i kātanña</i> , his eastward, east of him ;
<i>luchan</i> , west ;	<i>i lichanta</i> , our westward, west of us ;
<i>hulo</i> , above, up ;	<i>i hilonmame</i> , above us (not above you) ;
<i>papa</i> , below, down ;	<i>i pāpamiyo</i> , below us, underneath us ;
<i>mona</i> , front, first ;	<i>i menanñiha</i> , in front of them ;
<i>tate</i> , behind ;	<i>i tātenñiha</i> , behind them, in their rear ;
<i>entalo</i> , between ;	<i>i entaloñiha</i> , between them, in their midst ;
<i>fun</i> , near ;	<i>i funho</i> , near me, by my side ;
<i>halom</i> , in, inside ;	<i>i hālomñiha</i> , inside of them ;
<i>huyong</i> , out, outside ;	<i>i hiyongñiha</i> , outside of them, their outside ;

¹ In the Chamorro language there is no copulative verb. 'To be' is expressed only when it corresponds to the Spanish *estar* or the Italian *stare* when used to express position. *Iyoko* may be regarded in the light of a verb 'to be mine.'

agapa, right hand, *i āgapañña*, on the right of him;
akague, left hand, *i ācagueñña*, his left, left of him.

5. POSSESSIVE SUFFIXES WITH VERBS. — There are certain verbs which take the form of nouns with possessive suffixes to indicate person and number. These verbs may have the possessive form only in certain tenses of the indicative mood; or they may have this form ordinarily in interrogative expressions after the pronoun *hafa* ('what'):

ilēgko, I said ('my saying'); *ilēlegko*, I say ('my saying,' present tense); *gaōko*, I prefer ('my preference'); *hinasōko*, I think ('my thinking'); *pinelōko*, I believed ('my thinking' (was)); *hafa malagōmo*, what do you wish? ('what your wishing?'); *hafa ilegña*, what did he say? ('what his saying?'); *hafa ilēlegña*, what is he saying? ('what his saying?').

In answering such questions the same form may be used, but the ordinary declarative form of expression is frequently used. In the verbs given in the above examples, with the exception of *malagō*, the ordinary form used in conversation is the possessive. Following is the conjugation of the verb *alog*, 'say.' In the Chamorro the primitive word is shown in the direct imperative, the other parts being derived from it, as will be shown later in treating of the verb.

ALOG ! SAY !

PAST	PRESENT
<i>Ilegko</i> , I said,	<i>Ilēlegko</i> , I say, I am saying,
<i>Ilegmo</i> , thou saidst,	<i>Ilēlegmo</i> , thou sayest,
<i>Ilegña</i> , he said,	<i>Ilēlegña</i> , he says, he is saying,
<i>Ilegta</i> , we said (incl.),	<i>Ilēlegta</i> , we say, we are saying,
<i>Ilegmame</i> , we said (excl.),	<i>Ilegmámame</i> , we say, we are saying,
<i>Ilegmiyo</i> , you said,	<i>Ilegmímiyo</i> , you say, you are saying,
<i>Ilegñiha</i> , they said.	<i>Ilegñíñiha</i> , they say, they are saying.

VI. ADJECTIVES

1. QUALIFYING ADJECTIVES

1. SIMPLE ADJECTIVES. — Although many adjectives in the Chamorro language are in reality other parts of speech used to qualify nouns either in their primitive form or with the addition of

prefixes, suffixes, or infixes, there are some words which may be considered in their primitive form to be true adjectives :

<i>dangkulo</i> , big ;	<i>feda</i> , wide ;	<i>homhom</i> , dark ;
<i>dikiki</i> , little ;	<i>paopao</i> , fragrant ;	<i>chágò</i> , distant ;
<i>lokà</i> , high ;	<i>agaga</i> , red ;	<i>tunas</i> , straight ;
<i>yomog</i> , fat ;	<i>ápaka</i> , white ;	<i>homlo</i> , healthy.
<i>gasgas</i> , clean ;	<i>atuloñg</i> , black ;	

2. ADJECTIVAL PREFIXES. — Following is a list of the principal prefixes used in the Chamorro to form adjectives.

The Syllable ma. — Many adjectives expressing the quality nature, or condition of an object begin with the syllable *ma* :

<i>mahétog</i> , hard, solid ;	<i>manñge</i> , savory ;	<i>maase</i> , kind ;
<i>mañaña</i> , soft ;	<i>maasen</i> , salty ;	<i>mamáhlao</i> , ashamed
<i>mahañus</i> , softened ;	<i>maasne</i> , salted ;	<i>mangon</i> , quiet ;
<i>mahlos</i> , smooth ;	<i>maipe</i> , hot ;	<i>malañgo</i> , sick ;
<i>mapot</i> , difficult ;	<i>manñgheñg</i> , cold ;	<i>mames</i> , sweet ;
<i>makat</i> , heavy ;	<i>mauleg</i> , good ;	<i>maagsom</i> , sour ;
<i>masogsog</i> , lean ;	<i>magof</i> , glad ;	<i>malaet</i> , bitter.
<i>manana</i> , light (not dark) ;		

The Prefix ma used with Verbs. — As a prefix to verbs *ma* forms a participle, and is used to indicate the passive voice or condition

VERB	PARTICIPLE
<i>poka</i> , break ;	<i>mapoka</i> , broken ; to be broken ;
<i>titeg</i> , tear ;	<i>matiteg</i> , torn ; to be torn ;
<i>guflíi</i> , love ;	<i>maguflíi</i> , loved ; to be loved ;
<i>saúlag</i> , whip ;	<i>masaúlag</i> , whipped ; to be whipped ;
<i>palae</i> , anoint ;	<i>mapalae</i> , anointed ; to be anointed ;
<i>tuno</i> , burn ;	<i>matuno</i> , burnt ; to be burnt ;
<i>hafot</i> , bury ;	<i>mahafot</i> , buried ; to be buried.

These participles may be used as adjectives to qualify nouns as *maguflíi na gachonñg*, 'loved companion' or 'dear companion'. The prefix *ma* is used in several Melanesian languages in the same way ; and in Samoan it has the force of making certain active verbs neuter or passive.¹

¹ Codrington, op. cit., pp. 169, 188, 273, 274. Pratt, George, *A Grammar and Dictionary of the Samoan Language* ; London Missionary Society, 1893, p. 193.

The Prefix kâ. — This prefix is used with certain nouns and takes the principal accent or stress of the word. It has the effect of modifying the succeeding vowels as in the case of the article *i*. It signifies 'covered with' or 'spotted with':

<i>fachê</i> , mud ;	<i>kâfâchê</i> , covered with mud ; muddy ;
<i>hagâ</i> , blood ;	<i>kâhâgâ</i> , stained with blood ; bloody.

The Prefix gâ. — This prefix is used before nouns and infinitives and expresses taste, habit, or inclination :

<i>mames</i> , sweet ;	<i>gâmâmes</i> , fond of sweets ;
<i>tuba</i> , toddy ;	<i>gâtiba</i> , fond of toddy ;
<i>salape</i> , money ;	<i>gâsalape</i> , fond of money ;
<i>machochô</i> , labor ;	<i>gâmachochô</i> , industrious.

These adjectives may be used as nouns, as may be seen on page 306. In such cases *gâsalape i taotao* may be translated 'fond of money is the man,' or 'the man is a miser.'

The Prefix gusê. — This prefix is used with certain neuter or intransitive verbs to form adjectives denoting propensity or tendency :

<i>basnak</i> , fall ;	<i>gusêbasnak</i> , prone to fall ;
<i>mahñgañg</i> , to be frightened ;	<i>gusêmahñgañg</i> , easily frightened, timid ;
<i>guafi</i> , fire ;	<i>gusêguafi</i> , easily fired, irascible.

The Prefix ha. — This prefix has very much the same force as the preceding :

<i>lalalo</i> , to become angry ;	<i>hâlalalo</i> , easily angered, irritable ;
<i>bubo</i> , to be vexed ;	<i>hâbubo</i> , easily vexed ;
<i>sulon</i> , to slide, to slip ;	<i>hâsulon</i> , prone to slide.

in . . . an. — A noun with the syllable *in* prefixed and either followed by *an* (or *yan*) or without a suffix forms an adjective signifying 'infested with,' 'attacked by,' 'overrun with.' If the noun begins with a consonant the added syllable is inserted after the initial consonant :

<i>otdot</i> , ant ;	<i>inetdot</i> or <i>inetdotan</i> , infested or attacked by ants ;
<i>ulô</i> , worm, maggot ;	<i>inelúan</i> , infested by worms, maggoty ;
<i>sasata</i> , wasp ;	<i>sinasata</i> , infested by wasps ;
<i>benado</i> , deer ;	<i>binenado</i> , overrun with deer.

The Prefix mi. — This prefix signifies 'abounding in' :

<i>salapê</i> , money ;	<i>misalapê</i> , abounding in money, rich ;
<i>unai</i> , sand ;	<i>miunai</i> , sandy ;
<i>huto</i> , louse ;	<i>mihto</i> , lousy ;
<i>gâgâ</i> , animal ;	<i>miâgâ</i> , having many animals ;
<i>tiniñgo</i> , knowledge ;	<i>mitiniñgo</i> , well informed, learned ;
<i>acho</i> , stone ;	<i>miacho</i> , full of stones, stony ;
<i>tituka</i> , thorn ;	<i>mitituka</i> , thorny ;
<i>guinaha</i> , property ;	<i>miâguinaha</i> , wealthy ;
<i>sisiña</i> , power ;	<i>misisiña</i> , powerful.

The Prefix ê. — This prefix is used with certain substantives as the reverse of *mi*, signifying 'to be lacking in,' 'to be possessed of little' :

êhinaso si Huan, John is lacking in intelligence ; John has little brain.

êfino si tatamo, Thy father is (a man) of few words.

The Prefix nâ. — With certain adjectives or neuter verbs this forms an adjective expressing the effect of some act or thing. The derived word may also be regarded as a verb :

<i>gasgas</i> , clean ;	<i>nâgasgas</i> , cleansing ; to make clean ;
<i>mâho</i> , thirsty ;	<i>nâmahô</i> , thirsty-causing ; to make thirsty ;
<i>yayas</i> , tired ;	<i>nâyayas</i> , tiresome ; to make tired ;
<i>tenhos</i> , angry ;	<i>nâtenhos</i> , exasperating ; to make angry ;
<i>maañao</i> , afraid ;	<i>nâmaañao</i> , terrifying ; to make afraid.

The Prefix máma. — This prefix used with a verb signifies 'capable of being . . .' and may be rendered into English by an adjective ending in *-ble*.

<i>kano</i> , eat ;	<i>mâmakano</i> , edible ; capable of being eaten.
<i>gimen</i> , drink ;	<i>mâmagimen</i> , drinkable ; capable of being drunk.
<i>taitai</i> , read ;	<i>mâmataitai</i> , legible ; capable of being read.

The idea expressed by this prefix may be indicated by the suffix *on* or *yon*, as we shall later see.

The Prefixes gôf, chât. — These two prefixes are used with many words as contrasts to each other. *Gof*, *gef*, or *ges* expresses a good quality ; *chât* expresses a bad quality. As prefixes to adjectives *gof* is also frequently used to indicate the superlative absolute and *chât* to indicate the imperfection of a quality :

<i>géfpago</i> , pretty ;	<i>chátphago</i> , ugly ;
<i>géftano</i> , fertile ;	<i>chátano</i> , sterile (land) ;
<i>géfmata</i> , sharp-eyed ;	<i>chátmata</i> , near-sighted.

The Prefix tag. — This prefix sometimes denotes habit or disposition, and is often used with adverbs of place or position, to form adjectives :

<i>hulo</i> , above, up ;	<i>taghilo</i> , high, lofty, pretty high ;
<i>papa</i> , below, down ;	<i>tagpapa</i> , low, base ;
<i>lago</i> , north ;	<i>taglago</i> , in the north, well to the north ;
<i>katan</i> , east ;	<i>tagkatan</i> , in the east, oriental ;
<i>baan</i> , to rise late ;	<i>tagbaan</i> , accustomed to rise late.

Degrees of Quality

Superlative Prefixes sen, sesen. — These prefixes when used with a noun signify 'real,' 'true,' or 'genuine' ; as *sen lahe*, 'a real man.' When prefixed to adjectives they have the significance of 'very,' 'exceedingly.' —

<i>tailaye</i> , bad ;	<i>sentailaye</i> , very bad ;
<i>dangkulo</i> , big, great ;	<i>sendangkulo</i> , very big, very great ;
<i>abale</i> , bad, wicked ;	<i>senabale</i> , very bad ;
<i>baba</i> , bad, worthless ;	<i>senbaba</i> , very bad, quite worthless ;
<i>dikikê</i> , small, little ;	<i>sendikikê</i> , very small, tiny ;
<i>kokañao</i> , cowardly ;	<i>sesenkokañao</i> , very cowardly.

The Prefixes gof, gef, ges. — These prefixes also express the superlative, but usually in a good sense :

<i>gasgas</i> , clean ;	<i>gófgasgas</i> , very clean ;
<i>mauleg</i> , good ;	<i>géfmauleg</i> , very good, excellent ;
<i>gatbo</i> , beautiful ;	<i>géfgatbo</i> , very beautiful ;
<i>ápaka</i> , white ;	<i>gésapaka</i> , very white, pure white ;
<i>yayes</i> , tired ;	<i>gésyayes</i> , very tired, well tired.

The Prefix pinat. — This prefix denotes the possession of a quality in too great a degree :

<i>mames</i> , sweet ;	<i>pinatmames</i> , too sweet, over-sweet ;
<i>mantika</i> , lard ;	<i>pinatmantika</i> , too greasy ;
<i>maasen</i> , salty ;	<i>pinatmaasen</i> , over-salty ;
<i>malaet</i> , bitter ;	<i>pinatmalaet</i> , too bitter.

Modifying Prefix lá. — This prefix signifies quality in a modified degree. It may be translated 'what,' or by the English suffix *-ish*:

<i>ápaka</i> , white ;	<i>láápaka</i> , somewhat
<i>biho</i> , old ;	<i>lábiho</i> , rather old, o
<i>chatpago</i> , ugly ;	<i>láchatpago</i> , rather u

Prefix of Equality chá or achá. — These pre adjective or noun express comparative equality :

<i>Chámalañgo hao yan i chelumo</i> ,	Equally sick (a brother ;
<i>Acháápaka si Huan yan Hosé</i> ,	Equally white (i
<i>Achácarpintero si Pedro yan tata</i> ,	Equally carpent father.

Depreciatory Prefix chát. — This prefix use has the effect of detracting from the quality expri

<i>maipe</i> , hot ;	<i>chátmaipe</i> , not very
<i>liion</i> , visible ;	<i>chátliion</i> , poorly visib
<i>ápaka</i> , white ;	<i>chátápaka</i> , imperfect
<i>malatê</i> , educated ;	<i>chátmalatê</i> , poorly e
<i>masaulag</i> , whipped ;	<i>chátmausalag</i> , not w

Negative Prefixes

The Prefix ti. — This prefix used with an ad of denying or reversing the quality expressed word, like the English prefixes *un-*, *in-*, *im-*, in tive,' 'imprudent.' When alone it signifies 'not

<i>mauleg</i> , kind ;	<i>timauleg</i> , unkind ;
<i>gasgas</i> , clean, pure ;	<i>tigasgas</i> , unclean,
<i>liion</i> , perceptible ;	<i>tliion</i> , impercepti
<i>siña</i> , possible ;	<i>tisiña</i> , impossible
<i>méthnalom</i> , prudent ;	<i>tíméthnalom</i> , impr
<i>tomtom</i> , careful, cautious ;	<i>titomtom</i> , careless
<i>magahet</i> , true ;	<i>timagahet</i> , untrue
<i>matungo</i> , certain, known ;	<i>timatungo</i> , uncert
<i>mamatae</i> , mortal ;	<i>tímamatae</i> , immo

The Prefix tai. — This prefix is similar to the preceding, but is used with nouns to form adjectives. It signifies when alone 'there is not,' or 'there is no.'¹

<i>chii</i> , limit ;	<i>talchii</i> , infinite, without end ;
<i>hinekog</i> , end ;	<i>talhinekog</i> , endless, eternal ;
<i>guailaye</i> , worth ;	<i>talguailaye</i> , worthless ;
<i>isao</i> , sin ;	<i>talisao</i> , sinless, innocent ;
<i>tinigo</i> , understanding ;	<i>taltinigo</i> , senseless, without sense ;
<i>pao</i> , flavor, odor ;	<i>talpao</i> , insipid, without taste ;
<i>sinahguan</i> , containing ;	<i>talsinahguan</i> , empty, not containing.

3. ADJECTIVAL SUFFIXES *on* AND *yon*. — Adjectives expressing possibility are formed by adding to certain verbs *on*, if the word ends in a consonant or guttural vowel, and *yon* if it ends in a pure vowel :

<i>fatinas</i> , do, make ;	<i>fatinason</i> , feasible ;
<i>bābā</i> , whip ;	<i>bābāon</i> , deserving a whipping ;
<i>taaga</i> , desire ;	<i>taāgayon</i> , desirable ;
<i>halē</i> , root ;	<i>halion</i> , capable of being uprooted ;
<i>hagō</i> , get ;	<i>hagion</i> , attainable ;
<i>guflīi</i> , love ;	<i>guflion</i> , amiable ;
<i>asii</i> , forgive ;	<i>asiiyon</i> , pardonable ;
<i>ago</i> , change, alter ;	<i>aguyon</i> , changeable ;
<i>punō</i> , quench ;	<i>punūon</i> , extinguishable.

4. CONJUNCTIVE PARTICLE OR LIGATURE *na*. — Attributive adjectives are connected with the nouns they modify by means of the particle *na*. This particle is not translatable into English.

mauleg na taotao, good man ;
lahe na patgon, male child ;
patgon na chiba, young goat ;
gefmauleg na palaoan, excellent woman ;
sendikiki na gāga, very small animal ;
i tailaye na chalan, the bad road ;
gesāpaka na manog, pure white chicken ;
chatapaka na pulo, not quite white feather.

Omission of the Particle na. — If the adjective expresses a

¹The reverse of the prefix *tai* is *gai*, signifying 'there is' ; as, *gaichii*, 'finite,' 'there is an end,' 'having an end.'

necessary or inherent attribute it is not essential connecting particle :

i santos kilúos, the holy cross ; *i atuloñg aga*,

When an adjective follows its noun the part of the noun, if it ends in a pure vowel, takes the though followed by a genitive or possessive ; as,

i galagon ðpakå, the white dog ;

i paluman halom-tano, the wild pigeon

i chetdan lago, the foreign banana.

5. PREDICATE ADJECTIVES. — When the adjective is used as a predicate this particle is not used. There is no such construction in the Chamorro language, and the predicate adjective is considered to have a verbal nature ; thus *mauleg* translated 'to be good' ; even nouns used as predicates are considered as verbs, as both nouns and adjectives have tense ; thus, in *tata si Huan*, 'John is a father' translated 'to be a father.'

Mauleg i lahe, Good-is the man. (The man is good.)

Gefmauleg i palaoan, Very-good-is the woman. (The woman is very good.)

Magahet i sinangan, True-is the story. (The story is true.)

Misisiña i magalahe, The chief (or governor) is. (The chief is.)

Chago i chalan, Long-is the road. (The road is long.)

Kådada i inepe, Short-is the reply. (The reply is short.)

Kåfachê i tihong, Blood-stained-is the hat. (The hat is blood-stained.)

In the above examples it will be seen that the adjective precedes the subject. This is usually the case.

6. ADJECTIVES WITH DEFINITE ARTICLE OR POSSESSIVE PARTICLE. — In Chamorro such expressions as 'the sick child' or 'your little brother' are usual to render 'the child who is sick' or 'the brother who is little,' as though to distinguish them from

i patgon ni i malañgo, the child who is sick

i chelumo ni i dikiki, the brother-yours who is little

If the phrase is descriptive and not restrictive the adjective is used followed by the adjective. This is distinct from the use of the adjective as an adjectival conjunctive particle :

Guaha niyog gi gima na There is a coconut in the house
sendangkulo. which is very large.

Hulii tuhong na kâfache. I saw a hat which was covered
 with blood.

7. COMPARISON OF ADJECTIVES. — The absolute superlative is expressed by the prefixes *gof*, *gef*, *ges*, *sen*, *sesen*, as we have already seen. Equality is expressed by the prefixes *chá* or *achá*; and the possession in a lower degree of a quality expressed by an adjective is indicated by the modifying prefix *la* and the depreciatory prefix *chat*. Thus we have :

sénapakâ, perfectly white, truly white, really white ;
géfapakâ, pure white, finely white, beautifully white ;
cháapakâ yan, equally white with, as white as ;
láapakâ, somewhat white, inclined to be white ;
chátapakâ, poorly white, badly white, not quite white.

Comparative Degree. — It is probable that in the original language there was no comparison of qualities after the fashion of Aryan languages. In many other Pacific languages an expression like 'you are stronger than I' is rendered 'strong you, weak I.' This is not understood as meaning that I am really weak, but that I am weak as compared with you.

The Spaniards have introduced *mas* ('more') and *menos* ('less'), but the use of these words cannot be considered as in keeping with the genius of the Chamorro language.

Comparison may be made by using the possessive suffix *ña* to the adjective followed by *ke*. It is possible that this word is adopted from the Spanish *que* ('than'); but this is not certain, as we have in the language of Sesake, on the island of Three Hills, in the Shepherd group of the New Hebrides, the word *ki*, which is translated 'from'; as, 'he is blacker than I,' is rendered 'he is black from me.'

etogofña ke guaho, shorter than I ;
apakafña ke hago, whiter than thou.

Comparison of Inferiority. — To avoid the use of the Spanish *menos* the negative particle *ti* may be used with the comparative of equality. Thus, instead of saying 'he is less tall than I,' the expression can be changed to 'he is not so tall as I,' or 'he is not

equally tall with me.' By changing the adjective the ordinary comparative form could be used ; as, ' he is shorter than I.'

misakan, full of years, old, ancient ;
châmisakan, equally full of years, as old as ;
ti châmisakan, not as old as.

' Noah was less old than Methuselah ' may be rendered *Ti châmisakan si Noe yan Matusalén* ; or *Patgonña si Noe ke si Matusalén*, ' Noah was younger than Methuselah,' an improper expression, but a common form in the Chamorro.

8. REDUPLICATION OF SYLLABLES. — As in many other languages of the Pacific islands, the quality expressed by an adjective is intensified by the reduplication of the syllable following the tonic or accented syllable of the word, or the interpolation of a similar syllable. This syllable must always be short and it shortens the following syllables which are not guttural :

POSITIVE	AUGMENTATIVE
<i>dāngkulo</i> , big ;	<i>dāngkukulo</i> , overgrown, enormous ;
<i>lokā</i> , high ;	<i>lōkakā</i> , towering, very high ;
<i>gāsgas</i> , clean ;	<i>gāsgagas</i> , scrupulously clean ;
<i>bāobao</i> , tender ;	<i>bāobabao</i> , quite tender, very tender ;
<i>dikikē</i> , little ;	<i>dikikikē</i> , tiny, very small.

9. FORMATION OF THE PLURAL. — When an adjective qualifies a noun in the plural it takes the prefix **man** :

SINGULAR	PLURAL
<i>mauleg na chelo</i> , good brother ;	man <i>mauleg na mañelo</i> , good brothers ;
<i>tailaye na lahe</i> , bad man ;	man <i>ailaye na lalahe</i> , bad men ;
<i>dangkulo na sēsē</i> , big knife ;	man <i>dangkulo na sēsē siha</i> , big knives ;
<i>yomog na babue</i> , fat hog ;	man <i>yomog na babue</i> , fat hogs ;
<i>tunas na chalan</i> , straight road ;	man <i>ununas na chalan</i> .

With adjectives as with nouns the prefix *man* has the effect of changing certain initial letters, as indicated on page 303. When the idea of plurality is indicated by the plural form of the adjective it is unnecessary to add the regular plural sign *siha* to the noun. Nouns which form the plural irregularly, however, retain their plural form whether modified by a plural adjective or not.

Adjectives with Dual Nouns. — With nouns in the dual number the adjective does not assume the plural form :

Mauleg na chelo, good brother ; *Mauleg i chelo*, good (is) the brother.

Mauleg i chumelo, good (are) the two brothers (of each other).

Manmauleg i mañelo, good (are) the brethren.

Plural of Derived Adjectives — Derived adjectives form their plural by prefixing *man*, in the same way as primitive adjectives :

mauleg na lahe, good man ;

manmauleg na lalahe, good men ;

senmauleg na lahe, very good man ;

mansenmauleg na lalahe, very good men ;

gefmauleg na palaoan, excellent woman ;

mangefmauleg na famalaoan, excellent women ;

chátapakâ na manog, not quite white chicken ;

mañatapakâ na manog, not quite white chickens ;

mangefmuuleg i famagûon, the children are very good ;

mansenailaye i mañeumo, your brothers are very bad ;

mañatapakâ i pilon ganso, the goose-feathers are not quite white.

10. DERIVATION OF NOUNS FROM ADJECTIVES. — Denominants are formed from adjectives by inserting the particle *in* before the radical vowel of the adjective, as shown on page 305. In forming them from derived adjectives the same rule holds good in most cases as with primitive words :

DERIVED ADJECTIVE	DERIVED NOUN
chatpachod , foul-mouthed ;	chinatpachod , blasphemy ;
chatapakâ , whitish ;	chinatapakâ , whitishness ;
magof , contented ;	minagof , contentment ;
maasne , salty ;	minaasne , saltiness ;
malaet , bitter ;	minalaet , bitterness ;
tagahlo , prominent ;	tinagahlo , prominence ;
géfpago , beautiful ;	ginéfpago , beauty ;
géftano , fertile ;	ginéftano , fertility ;
géftao , generous ;	ginéftao , generosity.

With Negative Particle ti. — Adjectives combined with *ti*, as *timauleg*, 'unkind,' do not follow the above rule. The particle is inserted in the primitive word ; as, *ti-minauleg*, 'unkindness.'

2. DEMONSTRATIVE ADJECTIVES

Most of the demonstrative adjectives in Chamorro are identical with corresponding demonstrative pronouns or resemble them very nearly. They differ in being used to limit nouns, while the demonstrative pronouns are used alone.

1. **THIS.** — The demonstrative adjective 'this' is rendered into Chamorro **ayen** if placed before the predicate, and **yini** or **ini** if placed¹ after the predicate of a sentence :

Ayen *na patgon tumatañgis gi paeñge*, This child cried last night ;
Hulalatde yini (or *ini*) *na famalaoan*, I blamed these women ;
Ayen *na tentagô unfaesen*, This servant shalt thou ask ;
Faesen ini (or *yini*) *na tentago*, Ask this servant.

Use of the Spanish este. — The Spanish *este* ('this') is fast taking the place of *ayen* and *ini*. It may be used either before or after the predicate and does not change in gender or number. In the above sentences it is now more usual to say *este na patgon*, 'this child'; *este na famalaoan*, 'these women'; *este na tentago*, 'this servant.' With proper nouns the connection is *as* instead of *na*. **Este as Huan**, 'this John,' or 'John here.'

2. **THAT.** — When designating an object near the person spoken to, 'that' is rendered into Chamorro by **enao** or **yenao**. If it precede the predicate, *enao* must be used. If it follow the predicate, either *enao* or *yenao* may be used. The initial *y* of both *yenao* and *yini* is evidently used only for euphony, especially when following a word ending in a vowel, thus avoiding the sequence of two vowel sounds :

Enao *siha na galago*, Those dogs ;
Enao *manháhaohao na galago*, Those dogs are barking ;
Manháhaohao yenao na galago, Barking are those dogs ;
Enao as Pale, The priest there.

3. **YON, YONDER.** — To designate an object remote both from the speaker and the person addressed **ayu** or **ayo**, **yuhe** or **uhe**, are used. Of these words *ayu* only may precede, and *yuhe* or *uhe* may follow the predicate :

Ayo *na guma*, Yonder house ;
Ayo *siha na modong*, Yonder ships ;

¹ *ini* (this) is identical with the Malayan.

Dikike yuhe na patgon, Small (is) yon child ;
Ayu na lebblo yaho, Yonder book I like ;
Yaho uhe na lebblo, I like yonder book ;
Ayo as Kiko, Yonder Francisco ; Francisco yonder.

4. FORMATION OF ADVERBS FROM DEMONSTRATIVES. — From these demonstratives adverbs of place may be formed by prefixing the preposition *gi* ('in' or 'at') and combining it so as to form a new (abbreviated) word :

<i>gi yini</i> , in this,	becomes	guini , here ;
<i>gi yenao</i> , in that,	becomes	guenao , there ;
<i>gi yuhe</i> , at yon,	becomes	guihe , yonder.

In this relation we see a resemblance between the adverbs of place and the demonstratives somewhat like in the French —

<i>ce livre ci</i> ('this book'),	<i>ceci</i> ('this'), and <i>ici</i> ('here') ;
<i>ce livre là</i> ('that book'),	<i>cela</i> ('that'), and <i>là</i> ('there').

Adverbs may also be formed by adding to the demonstratives the locative particle **nai** and the directive particles **magi**, indicating motion toward the speaker, and **guatu** indicating motion away from the speaker :

From *ayu* (or *ayo*) we have **ayo nai**, 'yonder,' 'there,' 'in that place.'
 With *guatu* (or *guato*) we have **ayo guatu**, 'thither,' 'to that place.'
 From *este* (derived from the Spanish) we have **este nai**, 'here,' 'in this place.'

With *magi* we have **este magi nai**, **guini magi**, 'hither' (toward the speaker).

From *enao* and *guenao* we have **enao nai**, **guenao nai**, 'there,' 'in that place.'

With *guato* we have **enao guato nai**, **guenao guato**, 'thither' (away from the speaker).

From *guihe* we have **guihe guato**, 'thither,' 'to yonder place' (away from the speaker).

3. INTERROGATIVE ADJECTIVES

I. ETYMOLOGY. — The Chamorro interrogatives are closely allied to Melanesian forms, but are also undoubtedly of common origin with those of Polynesia. In the following table I compare them with the interrogatives of the Bugotu (southern part of Ysabel

island) and the Ngela (Florida island) of the Solomon group,¹ and with the Hawaiian and the Maori of New Zealand, belonging to the Polynesian family of languages.

CHAMORRO	BUGOTU	NGELA	HAWAIIAN	MAORI	ENGLISH
<i>hayi ? hai ?</i>	<i>hai ? ahai ?</i>	<i>ahai ?</i>	<i>wai ?owai ?</i>	<i>wai ?</i>	who ?
<i>hafa ? haf ?</i>	<i>hava ? na hava ? na hava ?</i>	<i>heaha ?</i>	<i>heaha ?</i>	<i>aha ?</i>	what ?

The Samoan *o ai* ('who') and *o le ā* or *se ā* ('what') are evidently weakened forms of the same words, and in the Malayan *apa* ('what') we also recognize the Chamorro *hafa*.

2. **Hayi, haye, hai, hae ?**—These are all forms of the Chamorro word for 'who.' They are used in connection with persons. It is interesting to note that the Chamorro resembles the Melanesian and Polynesian languages in such expressions as *Hayi naanña ?* 'Who is his name ?'

Hái na rae ? What king ? (literally, Who king ?)

Hayi siha na taotao ? What people ? (literally, Who people ?)

3. **Hafa, haf ?**—These two forms are used according to principles of euphony :

Haf na kato ? What cat ? **Hafa na guma ?** What house ?

4. **Mano ?**—This signifies either 'where' or 'which.'²

Mano na lebblo ? Which book ? (literally, Where book ?)

Haftaimano na lebblo ? What-kind-of book ? (literally, What-like book ?)

5. **Fia, fafia, fiyai ?**—These forms, signifying 'how many,' are used according to the nature of the nouns they modify. They are etymologically identical with the Samoan *fia* and the Hawaiian *e-hia*, *a-hia* (how many). *Fia* is used in reckoning time ; as, *Fia*

¹ See Codrington, R. H., *The Melanesian Languages*, Oxford, 1885, pp. 528, 549.

² Adverbs of manner 'how,' 'thus,' are derived from *mano* and the demonstratives *ini*, *ena*, *yuhe*, or more directly from the corresponding adverbs of place, *guini*, *guenao*, and *guihe*, by means of the prefix *tai*. Thus we have :

taimano, *haftaimano*, 'how,' 'like what,' 'what like,' 'where like' ?

taiguini, thus, like this, like here.

taigenao, thus, like that, like there.

taiguihe, thus, like that, like yonder.

pueñge? 'How many days?' (literally, 'How many nights?'). *Fafia* is used for asking the number of persons and living things; as, *Fafia na taotao?* 'How many people?' *Füiyai* is used with inanimate objects; as, *Füiyai na guma?* 'How many houses?' Other derived interrogatives are *takfia*, used in asking measurements; as, *Takfian yini na sagman?* 'How many (fathoms long) is this boat?'; and *Fahafa?* 'How many times?'

Each of these forms requires a particular form of numeral in reply, as will be shown later.¹ Both the interrogatives and the numerals have practically become obsolete in Guam, being replaced by the Spanish *cuanto* (how much) and *cuantos* (how many), and by the Spanish numerals.

4. INDEFINITE ADJECTIVES

1. **Guaha.** — In its primitive sense *guaha* signifies 'there is' or 'there are' (French, *il y a*; Spanish, *hay*; German, *es giebt*); as, *guaha hanom gi tipô*, 'there is water in the well.' Like all other words in Chamorro it may be used as several parts of speech. With a noun it may become a limiting adjective either with or without the connective particle *na*, signifying 'some.' With irregular plurals it is used alone, with regular plurals it is followed by *siha*:

guaha na tuba, some toddy; *guaha siha manog*, some fowls;
guaha na lalaha, some men; *guaha siha na gumu*, some houses.

When the noun is also modified by some descriptive adjective or participle, the latter may either follow it or come before it:

Guaha batsa mayulañg, Some raft broken up; there-is-a raft broken-up.
Guaha mayulañg na batsa, Some broken-up raft (gone-to-pieces raft).

Often the English 'some,' like the English indefinite article 'a,' is not expressed in the Chamorro:

Malago yô hanom, I want (some) water;
Malago gui niyog, He wishes (a) coconut;
Mamahan yô siha batunes, I have bought some buttons.

¹ This difference may be compared to the use by the Chinese of 'how many pieces' for inanimate objects, and 'how many' for persons; as, 'How many pieces of clothes?' but never 'How many pieces of men?'

In the last example *siha* may be translated 'several' (French, *quelques*, or *plusieurs*), or it may be considered merely as the sign of the plural.

2. INDEFINITE ADJECTIVES DERIVED FROM INTERROGATIVES. — These may be formed by the addition of the suffix *hâ*, *hayihâ*, *haehâ*, or *haihâ* being used with persons, *hafahâ* or *hafâ* ('whatsoever') and *manohâ*, *manhâ* ('whichsoever') with things:

haehâ *na taotao*, whatsoever person (literally, whosoever person);
hayihâ *na lahe*, whatsoever man; (whosoever man);
hafhâ *na guma*, whatsoever house;
manohâ *na sêsrê*, whichsoever knife.

3. NEGATIVE ADJECTIVES. — In its primitive sense **taya** (or **tat**) is the reverse of *guaha*, and signifies 'there-is-not' (French, *il n'y a pas*; Spanish, *no hay*; German, *es giebt kein, es giebt nicht*). Used with nouns it may be translated as the adjective 'no' (German, *kein*):

taya *na palaoan*, no woman (German, *keine Frau*);
tat *hanom*, no water (German, *kein Wasser*).

4. ADJECTIVES OF QUANTITY OR NUMBER. — These are **megae** ('much,' 'many') with things; **lahyan** ('many') with persons or things; **laguhâ**, 'several,' 'various'; **dididê**, 'a little,' 'few'; **i palo**, 'the remaining,' 'the rest of':

megae *na pution*, many stars;
lahyan *na taotao*, many persons;
laguha *na famaguon*, several children;
dididâ *na tuba*, a little toddy;
dididâ *na lalahe*, a few men; few men;
ti megae *na taotao*, not many people; [people.
i palo *na taotao*, the rest-of-the people; the remaining

5. ADJECTIVES OF COMPARISON. — The adverbs of manner (see foot-note, page 524) derived from the demonstratives **ini**, **enao**, **yuhe**, may be used as adjectives before nouns connected by the particle **na**:

taiguini *na finatinas*, such an act as this (literally, such-like act);
taiguenao *na lebblo*, such a book as that (near you);
taiguihe *na taotao*, such a person as that (yonder);

taimano na lebblo malagomo? what-kind-of-a book (is) your wish?
taiguini na lebblo, this-kind-of-a book.

6. INDEFINITES ADOPTED FROM THE SPANISH. — The following indefinite adjectives have been adopted by the Chamorros from the Spanish: **kuatkiet**, **kuatkiera** (from *cualquier, cualquiera*), 'any,' 'any whatever.' **niuno** (from *ni uno*), 'not one,' 'not a,' 'not a single': **niuno na guihan**, 'not a fish.' **masea haye**, **makesea haye** (*mas que sea*), 'whosoever (may be).' **un**, **uno**, **uno na**, 'one'; **un raina**, 'a queen'; **uno na taotao**, 'one person.' **otro**, **otro na**, 'the other': **otro na taotao**, 'another person.' **kada**, 'each': **kada guma**, 'each house.' **todo**, 'every,' 'all': **todo lahe**, 'every man'; **todo i tãno**, 'all the earth.' **todo siha na**, 'all' (plural): **todo siha na taotao**, 'all the people'; **todo i manunas**, 'all the just.'

Of these, *kada* and *todo* ('every,' 'all') do not take the particle *na* after them. Instead of *el otro*, *los otros*, we also have the Chamorro **i palo**.

(*To be continued.*)

HEREDITY IN HEAD FORM

By FRANZ BOAS

The recent discussion of Mendel's law has called renewed attention to the phenomena of heredity. In anthropology this problem has been discussed principally by Galton and Pearson who have treated their materials according to the method of correlations. The principle of this method requires two assumptions: first, that each parent has a certain influence upon the form of each offspring and that the amount of this influence remains the same in all cases, except that it is subject to chance variations; second, that the variability of the offspring does not depend on the form of the parent.¹ If Mendel's law holds good even in a restricted way in the human species, these assumptions would not be admissible on account of the dominant influence of one parent or the other, and the results of the method of correlation could be considered as rough approximations only.

If we assume that the influence of one parent dominates, we must expect to find a massing of the measurements of descendants at points corresponding to those of the parental measurements. Therefore, the greater the difference between the parents, the greater must be the variability of the offspring. The character of the laws of heredity can therefore be determined by an investigation of the question whether the variability of the offspring depends upon the difference between the parents.

I was led to take up this question by an observation which I had published in 1894, in a study of the half-bloods of the American and European races.² I found that in this case there is a decided tendency to develop a width of face that corresponds either to that of the European or to that of the American race, while intermediate forms are rare. This phenomenon conforms to Mendel's law.

¹ See Franz Boas, "The Cephalic Index," *American Anthropologist*, N. S., vol. 1, pp. 448-461.

² *Popular Science Monthly*, October, 1894, pp. 761-770.

I discussed this question at length with Dr Maurice Fishberg of New York, whose studies of the anthropology of the Jews are so well known, and he had the great kindness to collect for the purpose of this investigation measurements of whole families of East European Jews. Anyone who has tried to collect similar data will appreciate the difficulties of such an undertaking and the labor involved. Dr Fishberg succeeded in collecting measurements of forty-eight families. Although this number is hardly sufficient to elaborate the problem in detail, a few interesting conclusions can be drawn.

The cephalic indices of the whole series are distributed as follows:

Age.	MALES						FEMALES						TOTAL	
	FATHERS	SONS					MOTHERS	DAUGHTERS					Men.	Women and Children.
		≥20	15-19	10-14	5-9	1-4		≥15	10-14	5-9	1-4			
73 ¹	1	—	—	—	—	—	—	—	—	1	—	—	1	1
74	2	—	—	—	—	—	—	—	—	—	—	—	2	—
75	—	—	1	—	1	—	1	—	—	—	—	—	—	3
76	1	—	—	3	2	—	1	—	—	—	—	—	1	6
77	4	1	—	1	—	—	4	1	—	—	1	—	5	7
78	5	—	1	1	1	—	1	1	1	—	—	—	5	6
79	2	1	—	5	—	—	—	1	2	—	2	—	3	10
80	5	4	2	2	4	1	8	2	3	5	3	—	9	30
81	8	1	2	3	2	2	7	1	1	3	—	—	9	21
82	10	—	1	4	1	1	3	1	1	4	2	—	10	18
83	4	2	—	2	6	3	8	1	2	1	1	—	6	24
84	3	1	2	1	3	—	2	—	3	5	—	—	4	16
85	—	—	1	—	2	—	5	—	4	2	3	—	—	17
86	2	—	2	2	6	3	3	2	2	2	—	—	2	22
87	1	—	1	1	1	—	1	1	—	—	1	—	1	6
88	1	—	—	3	—	—	2	—	—	—	—	—	1	5
89	—	—	—	—	1	—	1	—	—	—	1	—	—	3
90	—	—	—	—	—	—	1	—	—	—	—	—	—	1
91	—	—	—	—	—	—	1	—	—	—	—	—	—	1
Cases	49	10	13	28	30	10	49	11	19	23	14	—	59	197
Aver.	81.2	81.2	82.7	82.0	83.2	83.6	82.9	82.2	83.1	82.6	82.9	—	81.2	82.7

This table shows that, while the heads of the men are a little more elongated than those of the women and children, the whole series is sufficiently uniform to admit of a comparison between the indices of individuals of different ages.

¹ The indices contain the values from 73.0-73.9, 74.0-74.9, etc.

If the material were sufficiently extensive, it would be easy to investigate directly the distribution of the indices of children whose parents have indices of certain fixed values. This is impossible with the limited material at our disposal. We can, however, study the relation between the variability of children and the differences between the parental couples.

Before entering into this question we will determine the distribution of variabilities in case Mendel's law should prevail.

According to a generalized form of Mendel's law we may expect some children to show the tendency to revert more strongly to the paternal than to the maternal type, while others exhibit the reverse tendency. This may be expressed in algebraical symbols, as follows: Let n be the total number of children, n_1 and n_2 respectively the number of children with dominant paternal and maternal type; r_p , r_m the coefficients of correlation of children with their fathers and their mothers among the series with dominant paternal type, r'_p , r'_m the corresponding coefficients among the series with dominant maternal type. Let x , y , z be the deviations of fathers, mothers, and children respectively; let $[]$ indicate averages; and let finally σ_f , σ_m , σ_c be the standard variations of fathers, mothers, and children respectively.

Then we have for the series of n_1 children with dominant paternal type

$$[z] = r_p \frac{\sigma_c}{\sigma_f} x + r_m \frac{\sigma_c}{\sigma_m} y$$

$$[xz] = r_p \sigma_c \sigma_f + r_m \frac{\sigma_c}{\sigma_m} [xy].$$

In our case the correlation between fathers and mothers or the "assortive mating"

$$r_{fm} = \frac{[xy]}{\sigma_f \sigma_m} = +0.15.$$

This amount is so slight that it may be disregarded. Therefore—

$$\left. \begin{array}{l} [xz] = r_p \sigma_c \sigma_f \\ [yz] = r_m \sigma_c \sigma_m \end{array} \right\} n_1 \text{ cases.}$$

In the same way

For the series with dominant maternal type we find in the same way

$$\left. \begin{aligned} [z] &= r'_{cf} \frac{\sigma_c}{\sigma_f} x + r'_{cm} \frac{\sigma_c}{\sigma_m} y \\ [xz] &= r'_{cf} \sigma_c \sigma_f \\ [yz] &= r'_{cm} \sigma_c \sigma_m \end{aligned} \right\} n_2 \text{ cases;}$$

and for the total series

$$(1) \quad [z] = \frac{\sigma_c}{n} \left\{ (n_1 r'_{cf} + n_2 r'_{cf}) \frac{x}{\sigma_f} + (n_1 r_{cm} + n_2 r'_{cm}) \frac{y}{\sigma_m} \right\}$$

$$(2) \quad [xz] = \frac{n_1 r'_{cf} + n_2 r'_{cf}}{n} \sigma_c \sigma_f$$

$$(3) \quad [yz] = \frac{n_1 r_{cm} + n_2 r'_{cm}}{n} \sigma_c \sigma_m$$

We may assume that in each series—the one with dominant paternal and with dominant maternal type—the variability will be independent of the deviation of the father (respectively the mother) from the average type. We will designate with s the variability of children with dominant paternal (or maternal) type who are descendants of fathers and mothers who have all the same deviations x and y respectively from the averages of fathers and mothers. When the average of the squares of the deviations of such a series of children is taken from the grand average, not from their proper average $[z]$, the average of these squares will be for the series with dominant paternal trait

$$s^2 + [z]^2 = s^2 + \left(r'_{cf} \frac{\sigma_c}{\sigma_f} x + r_{cm} \frac{\sigma_c}{\sigma_m} y \right)^2$$

when we take the average of these values for all the values of x and y we find

$$[s^2 + [z]^2] = s^2 + (r_{cf}^2 + r_{cm}^2) \sigma_c^2 \quad n_1 \text{ cases.}$$

In the same way we find for the series of children with dominant maternal trait

$$[s^2 + [z]^2] = s^2 + (r_{cf}'^2 + r_{cm}'^2) \sigma_c^2 \quad n_2 \text{ cases.}$$

Here it is assumed that the variability of the series with dominant paternal and with dominant maternal type is the same. Since both groups constitute the whole series, we have

$$(4) \quad \sigma_o^2 = s^2 + \frac{\sigma_c^2}{n} \{n_1(r_{cf}^2 + r_{cm}^2) + n_2(r'_{cf}^2 + r'_{cm}^2)\}$$

We will make two assumptions :

$$\text{I. } n_1 = n_2 = \frac{1}{2}n.$$

$$r_{cf} = r'_{cf}$$

$$r_{cm} = r'_{cm}$$

$$\text{II. } n_1 = n_2 = \frac{1}{2}n$$

$$r'_{cf} = r'_{cm} = 0.$$

For assumption I the series with dominant paternal and maternal traits assume the same form, *i. e.*, neither trait is dominant, and we have ordinary correlation.

$$(1^*) \quad [z] = r_{cf} \frac{\sigma_c}{\sigma_f} x + r_{cm} \frac{\sigma_c}{\sigma_m} y$$

$$(2^*) \quad \frac{[xz]}{\sigma_c \sigma_f} = r_{cf}$$

$$(3^*) \quad \frac{[yz]}{\sigma_c \sigma_m} = r_{cm}$$

$$(4^*) \quad s^2 = \sigma_c^2 (1 - r_{cf}^2 - r_{cm}^2).$$

For assumption II we find

$$(1^{**}) \quad [z] = \frac{1}{2} r_{cf} \frac{\sigma_c}{\sigma_f} x + \frac{1}{2} r_{cm} \frac{\sigma_c}{\sigma_m} y$$

$$(2^{**}) \quad 2 \frac{[xz]}{\sigma_c \sigma_f} = r_{cf}$$

$$(3^{**}) \quad 2 \frac{[yz]}{\sigma_c \sigma_m} = r_{cm}$$

$$(4^{**}) \quad s^2 = \sigma_c^2 (1 - \frac{1}{2} r_{cf}^2 - \frac{1}{2} r_{cm}^2).$$

We will now proceed to determine the average value for children of couples with the deviations x and y , and the variability of these children measured from the average.

According to assumption I

$$(5^*) \quad [z] = \frac{[xz]}{\sigma_f^2} x + \frac{[yz]}{\sigma_m^2} y$$

Since there is no difference between the series with dominant paternal and with dominant maternal traits,⁷ the variations of the children will be distributed regularly around their average type. Therefore,

$$(6^*) \quad s^2 = \sigma_c^2 \left(1 - \frac{[xz]^2}{\sigma_c^2 \sigma_f^2} - \frac{[yz]^2}{\sigma_c^2 \sigma_m^2} \right)$$

According to assumption II

$$(5^{**}) \quad [z] = \frac{[xz]}{\sigma_f^2} x + \frac{[yz]}{\sigma_m^2} y$$

The series with dominant paternal type will vary around the value

$$[z] = 2 \frac{[xz]}{\sigma_f^2} x$$

Its variability, measured from this average, will be

$$s^2 = \sigma_c^2 \left(1 - 2 \frac{[xz]^2}{\sigma_c^2 \sigma_f^2} - 2 \frac{[yz]^2}{\sigma_c^2 \sigma_m^2} \right)$$

If the variability is determined from the average of both series, the one with dominant paternal and the one with dominant maternal traits, its value will be

$$(6^{**}) \quad s_{zy}^2 = \sigma_c^2 \left(1 - 2 \frac{[xz]^2}{\sigma_c^2 \sigma_f^2} - 2 \frac{[yz]^2}{\sigma_c^2 \sigma_m^2} \right) + \left(\frac{[yz]}{\sigma_m^2} y - \frac{[xz]}{\sigma_f^2} x \right)^2$$

Since the variability of the series with dominant maternal traits, gives the same value, the formula presents the variability of children for parents whose deviations from the average are respectively x and y . We find thus, that in case of assumption II the variability of children increases with increasing difference between the parents.

The available material is so small that it is not possible to determine the formula that fits the observations most accurately. It is, however, easy to show that the variability increases with increasing difference between the parents. It appears that in both

series the expected average of the children of parents with the deviation x and y is the same. The following coefficients of correlation were calculated from the series of observations :

$$\frac{[xz]}{\sigma_e \sigma_f} = 0.30$$

$$\frac{[yz]}{\sigma_e \sigma_m} = 0.36$$

or approximately 0.33 for either. σ_e , σ_m , σ_f were found respectively 3.0, 3.2, 3.3 or approximately equal.

By substituting

$$\frac{[xz]}{\sigma_e \sigma_f} = \frac{[yz]}{\sigma_e \sigma_m} = r$$

and

$$\sigma_e = \sigma_m = \sigma_f = \sigma$$

we have according to I

$$(7^*) \quad s^2 = \sigma^2(1 - 2r^2).$$

According to II

$$(7^{**}) \quad s_{xy}^2 = \sigma^2(1 - 4r^2) + r^2(y - x)^2,$$

and for both

$$(8) \quad [z] = r(x + y).$$

The calculation of the variability of the children from the point $[z]$ found in (8) is, of course, very inaccurate on account of the small number of children in each family ; but since the same inaccuracies prevail for all differences between parents, it seems justifiable to compare the results for different values of x and y .

The variabilities thus obtained give decisive results. I have calculated the correlation between the standard variation of the children of each couple and the difference between the parents. It may be well to give the table of these differences and variabilities in full.

Absolute difference between deviations of parents ($y-x$).	Square of standard variation of children (s^2_{xy}).	Absolute difference between deviations of parents ($y-x$).	Square of standard variation of children (s^2_{xy}).
11.3	25.9	2.7	13.0
10.2	21.9	2.7	8.3
10.1	13.0	2.5	5.3
9.9	17.5	2.5	3.1
9.8	22.0	2.4	13.8
6.9	18.8	2.3	14.4
6.5	6.3	2.2	3.3
6.0	3.1	2.0	2.1
5.2	23.5	1.9	3.2
5.0	5.2	1.9	1.3
4.4	2.5	1.3	16.1
4.3	11.7	1.3	4.3
4.0	4.4	1.0	2.6
3.9	8.5	1.0	4.6
3.7	3.3	1.0	4.4
3.7	9.3	0.9	9.7
3.6	15.9	0.9	0.9
3.1	0.5	0.9	13.5
3.1	0.3	0.9	2.7
3.0	7.0	0.8	1.0
3.0	13.1	0.6	3.0
2.9	0.7	0.4	1.8
2.9	6.3	0.2	5.3
2.8	3.0	0.2	1.5

An inspection of this table shows clearly that the variability of children increases with increasing difference of parents. The index of correlation between the two is $+0.67$, which corresponds to an index of regression of $+1.6$. That is to say, the deviation from the average of the square standard deviation of children equals 1.6 times the deviation from the average difference of parents. Thus it will be seen that the variability of children is not by any means constant, and therefore our first assumption (I) is not tenable.

A calculation of the values $s^2_{xy} - s^2(y-x)^2$ from the table of observations, and a correlation of these values with the differences between parents give an index of correlation of $+0.14$ and an index of regression as above of $+0.2$. These amounts are so small that we may well assume that in a more extended series they would

still more approach the theoretical value zero. The agreement with our second assumption (II) seems satisfactory.

We conclude from these data that heredity of the cephalic index in individuals of the same race does not depend on the mid-parental value of the index, but that one-half of the children resemble in regard to this trait the father, and the other half the mother. According to equations (2**) and (3**) the index of correlation between father and child in the series with dominant paternal type, and between mother and child in the series with dominant maternal type is 0.66, so that we may say that *one-half of the children of a couple belonging to a certain race have a type the average of which is equal to the average of twice the father's type and once the racial type, while the other half have an average equal to twice the mother's type and once the racial type.*

It is likely that this law is also an approximation only, but it agrees with the facts much better than the assumption of the reproduction of the midparental type, in which case the offspring would all form one series the average of which would be equal to the average of the father's, the mother's, and the racial type.

It seems plausible that similar laws prevail in regard to other measurements, but probably in such a manner that the offspring resembles in one respect his father, in another his mother.

The data here given do not show what the law of heredity of the cephalic index may be when father and mother belong to different races. It must also be remembered that other measurements may follow different laws. A case of this kind is the stature of Americo-European half-bloods, which, as I have previously shown,¹ exceeds that of both parental types.

¹Popular Science Monthly, October, 1894.

THE YELLOW MEN OF CENTRAL AFRICA

By SAMUEL P. VERNER

The fact that there are large numbers of indigenes in the remote parts of the African continent whose skin is of bright copper color and whose physiognomy is quite different from that of the typical negro, is one comparatively little known to men of science, and is a source of surprise to the general public, although students of African anthropology and explorers of the interior of the continent are well aware of its occurrence. In my journeyings in the great Congo-Zambezi region I found many of these yellow people and became interested in their character and history. I have already described¹ the appearance and character of my friend Ndombe, "king" of the Baschilange, who was one of the finest types of these light-colored men; but I have not yet recorded the facts connected with this phenomenon nor discussed the possible reasons for it.

These yellow people of Central Africa are not detached tribes, but are families scattered throughout many different tribes. It is safe to say that at least fifteen percent of the entire population of Central Africa (which perhaps numbers 65,000,000) are light colored. To put it comparatively, there are as many yellow Africans in Central Africa as there are negroes in the United States. I did not find a single tribe without some of these yellow individuals, or, most frequently, families, included in its membership.

One noteworthy feature of these people is the extent of their geographical distribution. They are found all over Central and South Africa from the central Soudan to the Cape. They are found in relatively larger numbers in the more elevated parts of the country, especially in the headlands about the sources of the Nile, the Congo, and the Zambesi. So far as my observation went, these copper-colored people are confined to the Bantu division of the African race, but I do not think that this is exclusively the rule. They

¹ *Atlantic Monthly*, August, 1902.

live in the villages with the blacks, and in nowise seem to separate themselves into distinct political or social groups. For example, the uncle, and highly respected prime minister of the yellow king Ndombe, was Joka, whose skin was of a veritable ebon hue. The color did not seem to be a cause of geographical segregation at all.

A typical yellow African of pure indigenous character is usually tall, inclined to be slender, with large, bright, brown eyes and rather aquiline nose (the aquilinity greatly modified, however, from the norm), much smaller hands and feet than the other Africans, kinky hair, and oily skin. His bearing is usually more dignified than that of the blacks, and his general appearance much handsomer.

The physiognomy of these men differs from that of the negroes in being more Semitic in character; at the same time there is every difference between them and the Arabs. They have high cheekbones, and the facial angle is much nearer the perpendicular than that of any other Africans. The head is usually dolichocephalic, thus showing the true African classification of the type, but this is strongly modified by an unusual width transversely, so that some of them are almost as brachycephalic as the Caucasian. Ndombe's head, for example, was nearly as wide as long.

Technologically the yellow men seem superior to the others; their arts and industries are more advanced and their skill greater. For example, the Zappo-Zaps, a tribe which has more copper-colored members than any other observed by me, are far more advanced in blacksmithing, carpentry, weaving, etc., than other tribes, and they imitate the white men more readily and successfully. The customs and institutions of the yellow men are also more highly developed and their methods of government better organized. Thus Ndombe, a yellow Mukuba, encouraged his people in adjusting themselves to the introduction of foreign civilization; while Lukengu, a black potentate of the same tribe, positively resisted all progress, and was finally killed because of his ultra-conservatism.

The bright-colored Africans are also generally more intelligent, of a more sensitive nervous organism, less emotional but more

vivacious, and much more apt to cherish resentment. They are quicker in motion, and they seem to have a far livelier sense of humor; they are also more sensitive to pain and less capable of prolonged endurance or privation.

Of one thing I became thoroughly convinced—the color of these Africans is not the result of any recent admixture of white blood. The yellow men are descendants of other yellow men for many generations, probably for many centuries. This is supported by several points of evidence. The traditions of the colored men indicate no white ancestry; and owing to their remarkable powers of memory, the careful preservation of tradition, its transmission as a sacred possession to posterity, and the pride with which the Afro-Caucasian of mixed blood always refers to any known white ancestry, this traditional testimony of an unmixed descent for hundreds of years is of considerable value. Moreover, the history of African exploration, which is full and accurate, clearly shows no white residents for centuries in many parts of the continent where these yellow people have long resided. Again, there are no ethnic residua of white influence save of the most remote character, which will be discussed presently. A peculiar fact in this connection is that the color of the copper-hued Africans is not at all that of the mulatto or other degree of Caucasian mixture; their color is quite *sui generis*—of a curiously reddish tinge, somewhat like that of the American Indian, which the careful observer can readily distinguish from the other. For example, there were in my employ two copper-colored lads, one of whom was partly Portuguese, the other wholly African; yet the only external difference, so far as the skin was concerned, was this peculiar reddish tinge.

The question naturally arises, Whence the color of these millions of light Africans in the depths of the Dark Continent? This is one of the most difficult problems in the entire field of African anthropology. Like the question of the origin of their remarkable neighbors, the pygmies, the mystery of the development of these yellow men is both ancient and profound. Some light may be thrown on the problem, however, as the result of special research.

The attitude of these yellow people toward the other Africans is one enlightening circumstance. They consider themselves superior.

They do not like to marry black women, though they may have them for concubines. The tendency toward the perpetuation of the yellow type by natural selection is very strong indeed. The yellow men are generally regarded with a curious degree of respect, not to say envy, by the blacks, whose numerical superiority has never sufficed either to subdue or to assimilate their more favored cousins. It is worthy of note, also, that the children of typical yellow parents are physically strong, while the offspring of the black concubines of yellow men are relatively weak.

While the history of the African tribes is far from well known, the consensus of scientific opinion is that Africa was originally settled through migrations from Asia. At the same time, the fact that some of the aboriginal Asiatics were not only black in color but resembled some of the African types in many other respects, tends to forbid the hypothesis of entire local variation after settlement in Africa.

There are four reasonable hypotheses concerning the origin of the light-colored aborigines of Central Africa which may here be considered. These are (1) spontaneous evolution, (2) local variation, (3) recent admixture of foreign blood, and (4) ancient admixture of foreign blood.

The hypothesis of spontaneous evolution surmises that the copper-colored Africans are a higher development from the native black races. This hypothesis involves the whole theory of evolution, a discussion of which is not possible here.

The first hypothesis would be untenable without the support of the second. The supposition that local variation might account for the lightening of the color has one factor in its favor—that the light-colored Africans inhabit principally the more elevated portions of the continent. At the same time it is true that the blackest of Africans are also found in the highlands, with no apparent disposition to sequester themselves into the lower and warmer regions. Then, too, the pygmies, evidently the oldest of the African races, are very dark colored, and they, too, often inhabit the mountainous country.

That there has been an introduction of alien blood by which this extraordinary color of so many Africans was effected seems quite

likely ; but the time of its occurrence is not so easily asserted. It might be held that the admixture has been comparatively recent ; but there are only three ways in which modern variation could have occurred — from the mongrel semi-whites of northern Africa, from the heterogeneous white slave-traders of the coasts, and from the ubiquitous Portuguese. The first supposition is a most reasonable one, for there is little doubt that the people of northern Africa have done much to vary the color of the inhabitants of the interior, but it is hardly adequate for an explanation of all the points at issue. The second supposition — that the slave-traders effected the change — is barred by the fact that the Niger and Guinea regions, where the slave-trade reached its highest development, has the fewest of these copper-colored Africans — scarcely any at all, indeed. The third — that the Portuguese, who were long the most indefatigable of European pioneers in Africa, were responsible for this result — is the most probable of these suppositions as to a modern origin of the yellow Bantu ; but the vast number and the wide geographical distribution of the yellow people precludes the probability of their origin from this cause ; besides, the fact that the Africans on the Portuguese coasts, who are known to be Portuguese half-breeds, are entirely different from, and vastly inferior to, the people under discussion.

The fourth hypothesis is the most reasonable of all — that the light color of these Africans is derived from an ancient admixture of foreign blood. This is rendered probable by several considerations.

It must be conceded that skin-color is largely influenced by climate and custom. As one passes from the north temperate zone to the equator the races are found to become darker. Of course, ages have been required to produce this variation, and it would take a proportionately long time to effect any further variation — a change from dark to light and *vice versa* — with no radical introduction of foreign elements. African ethnology amply illustrates this. The older tribes, for example, are the darker — the pygmies never exhibit a light color at all. The black dolichocephalic negroes come next in infrequency of light skin ; then come those Africans in whose character and cult alike are evidences that they have not

been residents of the interior as long as the others. Among these last the copper-hued people are frequent.

Again, there is evidence that there have been three general successive migrations of people into Africa from the northeast, the region of the Nile and the Red Sea. Of these, the first settled Egypt and may have passed southward; the second built the pyramids; the third occurred after the rise of Muhammed and produced effects still discernible, though the immigrants are not yet crystallized as a distinct ethnic stratum. Each migration-group was probably lighter in color than the preceding one, and the commingling of the descendants of later comers with the offspring of the earlier groups would suffice to produce at least six distinct ethnic classes, with many more subsequently formed. All of these classes may be seen in the tribes of Africa today.

BOOK REVIEWS

Notes on the Report of Teobert Maler in Memoirs of the Peabody Museum, vol. II, No. 2. By CHARLES P. BOWDITCH. Cambridge, Mass., 1903. Privately Printed. 8°, 29 pp.

This is a continuation of the *Notes* previously published by the same author on Mr Maler's earlier report issued as vol. II, No. 1, of the *Memoirs of the Peabody Museum*. The present notes refer to the inscriptions on the stelæ, lintels, and altars, described and illustrated in Maler's second report, and in addition to these, several inscriptions from Menché (Maler's Yaxchilan), published by Maudslay in the *Biologia Centrali Americana — Archaeology*.

This great city of Menché, according to the dates in the inscriptions, was contemporaneous with Copan, Quirigua, Palenque, and Piedras Negras; but it has one date, indicated by the initial series on lintel 21, in the beginning Katun of Cycle 9, and therefore the earliest date in that cycle that has yet been found. It is separated from the next date of the local monuments by a period of three hundred years and probably refers to some episode before the building of the city began, presumably the first settlement in that region.

By comparing the dates on the different structures, Mr Bowditch distinguishes several periods of the city's history, marked by several stages of growth corresponding to eras of unusual activity, occasioned perhaps by waves of immigration. By the same method the order in which the different parts of the city were built are determined and the course of its development is traced from one ruined structure to another. It would appear that structure 24 and a part of 23, built during Katun 11, are the oldest buildings. Then, "about the time when 16 Katuns had been completed, the plan of the city was laid out on a scale of greater magnificence."

It was during this period, which must have been one of great prosperity, that most of the city was built and the most imposing buildings were erected. It is to this period also that most of the carved lintels belong. "It would appear that in a period from twenty to forty years later the buildings of the so-called 'greater acropolis' were erected. Here we find no sculptured lintels, but a great number of stelæ, having dates which show them to have been erected about 9. 18. 0. 0. 0."

The assignment of dates to different parts of the city is based, of course, on the supposition that the dates on the lintels and stelæ refer to the time of building, and, furthermore, "on the supposition that the Ben-Ik symbol in connection with a Katun has the value 13, and that the long buildings may in some cases have been built in parts at different times."

Indeed the only point in this paper that is not made quite clear is the reason for assigning the value 13 to the Ben-Ik symbol, but it is gratifying that we are given reason to expect a full discussion of this very interesting question in another paper. The notes conclude with a tabular view of the dates both in relation to the separate inscriptions and to the structures. G.

A Suggestive Maya Inscription. By CHARLES P. BOWDITCH. Cambridge, Mass., 1903. Privately printed. 8°, 20 pp.

In the book of *Chilan Balam* of Tizimin, and again in the book of *Chilan Balam* of Chumayel, it is stated that in a certain Katun 13 Ahau "Pop was set in order." This somewhat obscure statement has been a source of much difficulty to students of Maya history and tradition. Pop being the first month of the year, it could mean only one thing, viz., that something was done to the calendar at that time. Brinton was of opinion that it referred to the invention of chronological records, but it is much more probable that the allusion was to some correction that was made in the annual calendar. In 1901 Mr Bowditch expressed the opinion that the change hinted at consisted simply in bringing the beginning of the year into its proper relation with the seasons, and that the relation of the annual calendar to the long count was not affected. Mr Bowditch is now persuaded not only that the proof of this is available but that he has been able to identify the very inscription in which the adjustment referred to in the books of *Chilan Balam* is commemorated. This inscription, which forms the subject of the paper under review, is one of special interest. It is one of the few inscriptions that have come from Tikal, a city that has been very imperfectly explored, and in which no initial series has as yet been found.

The traditions of the Mayas were to the effect that their ancestors came from the west, and Mr Bowditch, arguing from the dates found in the different cities, thinks that their course was from the west and south, one branch settling at Copan while another pushed on to the Usumacinta valley. Toward the end of Cycle 9 both these branches moved northward, founding Seibal, Tikal, Bacalar, and Chichen-Itza at successive

stages of their migration. The date 10. 0. 0. 0. 0 is found at Seibal, while at Chichen-Itza the only known date is 10. 2. 9. 1. 9. Therefore, Mr Bowditch argues, if a date were found at Tikal, it should be between these two dates. In fact, the Tikal inscription begins with the date 3 Ahau 3 Mol, which may be 10. 0. 15. 8. 0. Afterward comes the number 2. 11. 12 and the date 6 Eb 0 Pop, which would then be 10. 0. 18. 1. 12.

In an earlier paper Mr Bowditch attempted to demonstrate the likelihood of an agreement between the dates on the monuments of the different cities and the records of the books of *Chilan Balam*. Following the same line of argument he is led to look on the Tikal tablet for some indication of a correction in the calendar.

Unfortunately we are not clearly told anywhere what method was used by the Mayas for making the year and the seasons correspond, and there is disagreement with regard to the method used by the Mexicans. Leon y Gama, however, states that the Mexicans added 25 days every 104 years. If the Mayas used this method and if they had neglected from the beginning to apply it to the adjustment of the calendar, and if the date 6 Eb. 0 Pop given in the inscription is 10. 0. 18. 1. 12, = 1,446,512 days = 3,963 years = 38×104 years + 11 years, and if 1 day was allowed for each four years of the odd years, then when they reached the date given in the inscription the Mayas would have just exactly 952 days to allow in order to make the calendar correspond to the seasons. This is the number recorded in the inscription (glyphs 4 and 5) where 2. 11. 12 are noted. By counting back 952 days from 6 Eb. 0 Pop, therefore, to 3 Ahau 3 Mol and proceeding from that date, the Mayas would, on reaching 6 Eb. 0 Pop again, find the beginning of the year in its proper place. Thus we find in the inscription the date 6 Eb. 0 Pop, the 952 days and the date 3 Ahau 3 Mol. In glyph 13 one day is added, bringing the count to 7 Ben 1 Pop.

Mr Bowditch expresses the opinion that the Mayas actually made the correction in the manner indicated, and he shows further that about this time was a period of peculiar interest for the Mayas because they had just passed a day that represented the completion not only of an exact number of years of 365 days but also an exact number of synodical revolutions of the planet Venus, understood by the Mayas as a period of 584 days (Dresden Codex, 46-50). "It would be wise therefore to look for a rectification of the Venus revolutions as well as for a rectification of the calendar, especially as in glyph 16 we find the Venus Symbol. . . . The synodical revolution of Venus is really 583.92 days or $\frac{8}{100}$ of a day

less than 584 days. Not having a decimal system the Mayas would be likely to express such a quantity as a fraction with 1 for a numerator. As a matter of fact $\frac{1}{12}$ of a day is a very close approximation to $\frac{8}{106}$, and it would be natural for them to have decided that the correction should be made at the rate of one day in each twelve Venus revolutions."

It is found by calculation that on the day 7 Ben 1 Pop, noted above, 2,478 revolutions and 520 days had passed, and so 64 days more are required to make an exact number of revolutions. This would bring the count to a day 6 Caban, and we find 6 Caban in glyph 17. On that day just 2,479 Venus revolutions would have been completed.

From his observations Mr Bowditch thus reaches the important conclusions that we have learned how the Mayas compensated for the error in the 365-day year, and that they not only made this correction at Tikal but that they corrected at the same time their observations of the synodical revolution of Venus.

The correspondence of numbers and dates in the Tikal inscription is certainly remarkable, to say the least. The careful work and accurate methods of the author make the paper one of substantial value that will be read with interest and profit by all students of the Maya inscriptions. The objection that will be raised is that there is no distinct indication that the date found in the inscription is really that proposed by Mr Bowditch. Further exploration at Tikal may settle definitely the question of dates.

Not the least valuable part of the paper is the suggestion on the last page concerning the use of the table on page 24 of the Dresden Codex. We are shown, by means of an example, how the quantities in that table might have been applied by the Mayas to the solution of such a mathematical problem as is presented by the inscription of Tikal. G.

Divisions of the Parietal Bones in Man and other Mammals. By ALEŠ HRDLIČKA. Author's Edition, extracted from Bulletin of the American Museum of Natural History, Vol. XIX, Article VIII, pp. 231-386. New York, July 11, 1903.

This well-printed monograph, with 19 plates, 39 text figures, exhaustive tabular statements, bibliography (pp. 382-386), and alphabetical index of authors, is a model of detailed scientific observation and description. After résuméing (pp. 232-254) the work of previous investigators, Dr Hrdlička gives the results of his own examination of "nearly 3,000 Indian and 400 white and negro crania; a little over 400 skulls of apes and monkeys; and a little over 2,000 skulls of other mammals." Divisions of the parietal bone are rare in man, comparatively frequent in

monkeys, and almost completely absent in other mammals. Hrdlička's material furnishes two complete and six partial divisions in man; eighteen complete and thirty-five partial divisions in apes and monkeys; one major and two minor complete divisions (the first cases on record) in mammals below the monkeys. The Old World monkeys exhibit a much larger proportion of complete, but a smaller proportion of incomplete divisions than those of America. Parietal divisions are rather frequent in the macaques, rare in the cynocephali and the marmosets. With few exceptions the divisions occur in young or adolescent monkeys, occlusion evidently taking place early in life. In man parietal divisions may occur "at all ages from the embryonic to advanced adult life." They are more common (2 : 1) in female than in male monkeys, but the reverse is true of man. Anomalous parietal divisions occur more frequently in monkeys and apes than in man. The author considers that in apes and monkeys parietal divisions are "examples of disturbed normal development, or *dismorphism*, with, perhaps, a tendency towards neomorphism," while in man these anomalies "may represent more or less a sort of *atavisism*"—this is suggested by their more frequent occurrence in monkeys and apes. The two cases of complete parietal division in man (reported by Putnam in 1883 and reexamined by Hrdlička) occur in two male crania of Indians from prehistoric stone graves in Tennessee. There is nothing pathological about either of these skulls.

ALEXANDER F. CHAMBERLAIN.

1. *Die Braut muss Billig sein*. [A Bosnian opera.] By DR FRIEDRICH S. KRAUSS. Leipzig: A. Schumann, 1903. 12°, 63 pp.
2. *Auf Uferloser See*. [Drama in four parts.] By BRANISLAV GJ. NUŠIĆ. German translation by DR FRIEDRICH S. KRAUSS. (Library of Selected Servian Masterworks, with Literary-historical Introductions, Published by Dr Friedrich S. Krauss, Vol. I.) Leipzig: Adolph Schumann, 1903. 12°, xxviii, 111 pp.
3. *Streifzüge im Reiche der Frauenschönheit*. [In twenty numbers, with nearly 400 illustrations of the most beautiful types from the women of all nations.] Leipzig: Adolph Schumann, 1903. 4°, 20 parts.

The distinguished South Slavic ethnologist, Dr Friedrich S. Krauss, of Vienna, has given fresh proof of his versatile and tireless activity by bringing out within the first months of the present year three distinct works, two of which are in line with his general studies in Servian custom and folklore, while the third is more ambitious and wide-reaching in scope, being no less than an attempt to analyze the idea of womanly beauty as handed down from remote ages in every part of the world.

With regard to the first, it may be explained that Bosnia is an Austrian province of Serbia, that hitherto obscure kingdom which has recently become the focus of international attention by reason of the tragic overthrow of the ruling dynasty, the event being merely the latest in the long series of conspiracies, revolts, and massacres which have made up the history of the Balkan states for centuries. The jumble of semi-barbarous and jealous races — Rumanian, Bulgarian, Magyar, Serb, Greek, and Arnaut — all held down by the still more barbarous alien Turk, with the constantly shifting panorama of battle, banquet, siege, and escape, afford dramatic opportunities of which the Doctor has made good use in his opera. The action is laid in Bosnia in 1639, a period when marriage by purchase, as indicated in the title, was superseding the good old custom of marriage by capture. The story turns upon the fortunes of a Bosnian bride destined for a Moslem husband. Peasants, soldiers, officers, dancing maidens, and grand vizier, play their parts in turn in camp and castle, with a moonlight dance by the wood fairies for interlude. The treatment and versification are warmly praised by German critics. The music, by a Servian composer, is not given with the book text.

The second work, forming one of a series of Servian masterworks which the doctor is now editing, is his own translation of a drama by Branislav Nušić, a talented young Servian who, although still under forty, has already established his reputation as poet, journalist, patriot, and statesman. The frontispiece portrait shows a keen intellectuality, and a characteristic biographic introduction is supplied by the translator. The Servian title, indicating the unknown beyond, has been aptly rendered by the translator "On the Shoreless Ocean." The scene is laid in Belgrade, the capital; the period is the present. The characters are a local official, his wife and their little daughter, a minister of state, a doctor, a gossiping mischief-maker, and several other representatives of more or less fashionable society. It is an intensely human story, simply and powerfully told and leading up to a tragic climax — a story short enough for a summer afternoon, but deep enough to haunt the memory for years. It seems almost a fitting coincidence that it is dedicated to the murdered queen. It is indeed a masterwork and the translator deserves thanks for introducing it to a larger audience.

In the opening chapter of his great work, *Excursions into the Kingdom of Female Beauty*, the author asserts that the history of human culture is in large measure the history of beautiful women, from Helen of Troy to Isabella of Castile, and quotes the Chinese proverb, "With a laugh she

destroyed a city and with another a kingdom." In his handling of the subject, however, we find that by beauty he means not simply physical charms—for tastes differ in every country—but rather that subtle combination of qualities which render a woman attractive, and of which physical beauty is a chief but not the only factor.

He traces the historical development of the idea of beauty as indicated in the works of the poets and teachers of antiquity, taking up in succession Egypt, Asia, Greece, and Italy, with notices of the various phases of the ancient Aphrodite cult, and coming down to the public beauty contests of Sicily and France, and the descriptive guslar verses of his own Servia. After showing the decline of woman's condition and influence through the dark ages in Europe, he follows her gradual emergence to her present high position and declares that the modern woman developed in France. An interesting feature is the study of the gradual change in the conception of beauty in accord with the growth of higher ideals, conceptions as radically different as the types exemplified in the "full-moon face" of the harem slave and the clear-cut features of the average American girl. Another section of more strictly ethnologic character contains an analysis of the physical constituents of female beauty as regarded by the various races and nationalities, with the means used to accomplish the desired result, thus bringing up the whole question of personal adornment—from jewels, paint, and false tresses in Europe, to blackened teeth, tattooed lips, and scarified cheeks in Asia and Africa.

The work is splendidly printed in Roman type on fine paper and is abundantly illustrated with a series of fine portraits from life, chiefly from collections in Leipzig and Vienna. A few are open to criticism for a suggestion of coarseness that is not in accord with American standards. It is complete in twenty numbers. JAMES MOONEY.

In the Andamans and Nicobars. The Narrative of a Cruise in the Schooner "Terrapin," with Notices of the Islands, their Fauna, Ethnology, etc. By C. BODEN KLOSS. With maps and illustrations. London: John Murray, 1903. 8°, 373 pp.

This volume will be acceptable to American readers, naturalists and ethnologists, not only on its own merit, but because of its dedication to Dr William Louis Abbott, the distinguished Philadelphian, in whose fellowship Mr Kloss made the cruise. The specimens collected in natural history and ethnology are, thanks to Dr Abbott, now in the U. S. National Museum at Washington. The *Terrapin* (Dr Abbott, captain

and owner) is a Singapore-built teak schooner, made specially for exploration, 40 tons register and drawing $7\frac{1}{2}$ feet. In her these two ardent explorers left Singapore in October, 1900, called at Penang, coasted Tenasserim among the islands of the Mergui archipelago, crossed the Bay of Bengal to Barren island, and slowly journeyed among the Andamans and Nicobars, making collections and observations. Returning they touched at Acheen, northern Sumatra. In this review it is concerned specially with the ethnology. On Barren island they met the Aka-Balawa, a fading remnant of Negritos, and sailed for Port Blair, in South Andaman. From this point southward they stopped at favorable places, making collections and obtaining photographs. The people of this group, as is well known, are Negritos, scarcely 58 inches in stature. On January 21, 1901, the *Terrapin* anchored in Sawi bay, Kar Nicobar, less than a hundred miles from Little Andaman. But in this brief distance, people, houses, dress, customs, arts, all were changed. The Nicobarese have yellow-brown skin and straight hair, they are of medium stature (64 inches), are Malayan in type and culture, and look southward for their ethnic relationships. There are two types of these natives—the Shom Pen, supposed by Kloss to be the aborigines, and the coast people, who are supposed to have a small proportion of many varieties of mankind that have touched at their islands, grafted on the Malay stock. These are dying out. The author faithfully and minutely records his own observations and has gathered what is worth saving in the literature of the subject. Dampier's account of his romantic sojourn in the islands and miraculous escape in 1688 is reproduced in full.

The author and Dr Abbott passed in and out among the natives freely, setting traps, shooting specimens, and collecting ethnographic material, hence photographing was easy. The reader walks with the narrator everywhere, so that it is as good as a visit to have Mr Kloss tell the story. In the appendix will be found a table of mammals, by Mr Gerrit S. Miller, of the U. S. National Museum, and a list of birds from the latest publications. The volume is in excellent style and forms a much-needed handbook on the Andamans and Nicobars.

O. T. MASON.

Shell-heaps of Lower Fraser River, British Columbia. By HARLAN I. SMITH. (Memoirs of the American Museum of Natural History, Volume IV.) New York: March, 1903. 4°.

This well-illustrated memoir, which is another of the publications of the Jesup North Pacific Expedition, is a welcome and important addition

to the literature of American shell-heaps, and the author deserves the thanks of all students of archeology for the thorough manner in which he has performed his task.

The shell-heaps described are shown to be sometimes miles in length and are commonly about thirty yards wide and three or four feet in depth, although there are instances in which the shell deposits are nine feet in thickness. As indicative of the age of the shell-heaps, Mr Smith records the occurrence in one of them of a tree-stump more than seven feet in diameter, while another, measuring four feet, showed four hundred rings of growth. The great antiquity attributed by the author to the heaps, however, will probably not meet with general approval, long and continued study in many fields and under various conditions being necessary to satisfactorily settle this question of age.

A feature of British Columbia shell-heaps, which is quite unusual in such deposits along the Atlantic slope, is the occurrence of alternating layers of shells and mold, those of the east being of shells only. The shells in the British Columbia heaps are chiefly those of clams and mussels, but some oyster shells are also found.

Except a few articles of native copper no metal was discovered. The implements found appear to be generally similar to those used by the modern Indians of the region and consist of wedges, whetstones, harpoon and arrow points, knives, etc. The material of which the implements are made is usually bone or antler and stone, while the types are in most respects similar to those found in the shell-heaps of the Atlantic coast. Some shell implements were also found by Mr Smith. Both chipped and ground objects are common, and carving as well as etching of bone tools prevails. A number of detachable harpoon points were found at Eburne; the collection contains also specimens of stone partially sawed, examples of which are illustrated in the memoir. Pipes of the tubular variety from Port Hammond are also figured, but these were probably found on the surface rather than in the heaps. Stone mortars from Eburne with sculptured heads indicate considerable advancement in aboriginal art, and in some respects are not unlike those found in ruins of Central America.

J. D. McGUIRE.

Syrian Songs, Proverbs, and Stories. Collected, translated, and annotated.

By HENRY MINOR HUXLEY. (From the Journal of the American Oriental Society, vol. XXIII, 1902, pp. 175-288.)

This collection of popular poetry, comprising 116 numbers, was recorded by the author, from their recital by a native, while sojourning in

the Lebanon. The bond of union between these brevities of literature, whose proper home is the East, is that they all give expression to the emotions, the reasoning and observation of life of the masses — they all belong, as it were, to primitive poetry. And as they faithfully reflect the views and thoughts, the customs and manners of the people, they are a valuable and important means for a knowledge of their mental character and daily life. Mr Huxley gives, with the original Arabic text, a transcription in English characters, a clear and faithful translation, and, where necessary, philological and explanatory notes. The list of publications bearing on the dialect and subject-matter of the essay will be especially appreciated by students.

I. M. CASANOWICZ.

The Human Races : A Sketch of Classification. By DUREN J. H. WARD. Privately printed. 12°, 26 pp.

This handy pamphlet sets forth on the first page the author's scheme of Anthropology ; the rest of the book is devoted first to the historical summaries of the epoch-making works on this science, beginning with Vesalius and Copernicus in 1543 and ending with Romanes in 1889. Since then, of course, the great summaries of Keane, Deniker, Ripley, and Sergi have appeared. The bases of classification are the zoölogical place of man, paleontological grouping, color, skull, hair, stature, temperament, language, religion, sociology, fine arts, industry, and ethnical genealogy. Race is defined as the typical individuals in a people who possess attributes alike and different from the types in other peoples. Each one of these is developed through the first eighteen pages. Pages 20-23 are occupied with a tabular statement of all living peoples in their relation to one another. At the close of the pamphlet monogenism or polygenism, race origin, race variation, race interblending and final race unity are described. All of Mr Ward's studies in anthropology are valuable in their grasp of the subject as a whole from different points of view.

O. T. MASON.

PERIODICAL LITERATURE

CONDUCTED BY DR ALEXANDER F. CHAMBERLAIN

[NOTE.—Authors, especially those whose articles appear in journals and other periodicals not entirely devoted to anthropology, will greatly aid this department of the *American Anthropologist* by sending direct to Dr A. F. Chamberlain, Worcester, Massachusetts, U. S. A., reprints or copies of such studies as they may desire to have noticed in these pages. — EDITOR.]

Adachi (B.) Hauptpigment beim Menschen und bei den Affen. (Z. f. Morph. u. Anthr., Stuttgart, 1903, VI, 1-131.) This valuable monograph, with 3 tables and a good bibliography (pp. 124-129), treats of pigmentation of the skin in men and anthropoids, their relations and the interrelations of pigmentation among the anthropoids, the "blue spot" in children, etc. A résumé has already been noticed in *Amer. Anthr.*, 1902, N. S., V, 762. The section on the "blue spot" (pages 102-123) résumés the data on the subject. Dr Adachi concludes that the "blue spot" is not an atavism, but rather a rudimentary or regressive characteristic; it is something normal, not an abnormality.

— **u. Fujisawa (K.)** Mongolen-Kinderfleck bei Europäern. (Ibid., 132-133.) Brief description, with figure, of a "Mongolian spot" in a Moravian infant girl seven weeks old, resembling those found in Japanese children.

Anthony (R.) L'évolution du pied humain. (Bull. Soc. d'Anthr. de Paris, 1902, V^e s., III, 818-835.) In this article, with 14 figures, based chiefly upon the recent studies of M. Volkov, the author reaches the conclusion that in the evolution of the human foot ontogeny repeats phylogeny. The foot of new-born children of our race reproduces that of men of lower races, approaching, sometimes, even more than the latter, the foot of the arboreal simian, and particularly that of the gorilla, decidedly nearest to the human foot.

Azoulay (L.) Un progrès important pour les musées phonographiques. Reproductions galvanoplastiques des phonogrammes. Moules métalliques inaltér-

ables. (Ibid., 787-793.) Describes, with some detail, the galvanoplastic reproduction of phonograms and casting the wax disks on a metal matrix (the "phonotype" of the Vienna Committee).

— Moules galvanoplastiques et moulages en cire des phonogrammes sur cylindres. (Ibid., 796-798.) Brief account of wax reproductions of galvanoplastic casts of phonograms.

Beschreibung zu dem im Optischen Institute von O. H. Meder, Leipzig, angefertigten Schäldiagrammen nach Professor Dr. Klaatsch. (Cbl. d. d. Ges. f. Anthr., München, 1902, XXXIII, 152.) Brief description, with figure, of a skull-drawing apparatus devised by Dr Klaatsch. The writing point is of gold, pierced for ink.

Bolton (H. C.) Early instance of tangible lip reading. (Science, N. Y., 1903, N. S., XVII, 631-632.) Notes a case of a girl reported by Bishop Burnet in 1685.

Brabrook (E. W.) Presidential address. (Folk-Lore, Lond., 1903, XIV, 13-27.) Treats of "the light thrown by the study of folklore on the origin and development of the faculty of imagination in mankind." Among the topics considered are: Prehistoric man and his works (imagination was much exercised in neolithic age),—the treatment of the dead in the bronze and iron age shows further growth of the imagination,—festivals of the dead and spirit-lore among primitive peoples [(Australians, Eskimo, Nicobarese), totemism and heraldry, etc. There is much still to be learned from "the products of that more untutored imagination from which the primitive peoples have derived their incantations and their customs."]

- Collineau (M.)** Gigantisme unilatéral avec hypertrophie de l'hémisphère cérébrale du côté opposé. (Rev. de l'Éc. d'Anthr. de Paris, 1903, XIII, 99-100.) Résumés account of Dr Reissmann in *The Australasian Medical Gazette* for Sept. 20, 1902, of an infant presenting exaggerated development of the right side of the body accompanied by greater development of the opposite side of the skull.
- Cunningham (D. J.)** Right-handedness and left-brainedness. (J. Anthr. Inst., Lond., 1902, XXXII, 273-295.) In this article (the Huxley lecture for 1902), with 2 plates and 7 figures, after resuming the data as to the right-handedness of paleolithic and neolithic man, Dr Cunningham discusses, with references to recent literature, the topic indicated, from the anatomical and physiological standpoint. Fetuses, children, apes, microcephalic idiots (18 were observed), etc., are considered. The bulging of the arm-area in the human cerebrum (right brain) about the middle or end of the sixth fetal month precedes the shaping of the speech-area, which does not strongly develop before the end of the first infantile years. This argues for the view that the high functioning of the arm was achieved before articulate speech. Right-handedness is "due to a transmitted functional preëminence of the left brain." The highest degree of right-handedness occurs in civilized races engaged in the highest skilled labor—the introduction of machinery (type-writer, printing machine, looms, etc.) may in time reduce this preëminence somewhat.
- Dixon (R. B.)** The American Association for the Advancement of Science. Section H. Anthropology. (Science, N. Y., 1903, N. S., XVII, 286-290.) Gives abstracts of papers read Dec. 30, 1902, to Jan. 2, 1903, at Washington, D. C.
- Du Chaillu, Paul Belloni.** (Rec. of Past, Washington, 1903, II, 158-160.) Biographical sketch with list of works and portrait of Du Chaillu, who died at St Petersburg, April 29, 1903.
- Ellis (H.)** Variation in man and woman. (Pop. Sci. Mo., N. Y., 1903, 237-257.) Reply to criticism by Professor Pearson, who denies that the variational tendency is more marked in man than in woman. Professor Pearson's rejection of all abnormalities as pathological is thought unscientific. The essential unity of physiology and pathology was made clear by Virchow.
- Fischer (E.)** Beeinflusst der M. genioglossus durch seine Funktion beim Sprechen den Bau des Unterkiefers? (Anat. Anz., Jena, 1903, XXIII, 33-37.) In this article, with one plate (3 figs.) the author concludes that the genioglossic muscle in its speech-function does not exert a great formative influence upon the lower jaw.
- Zur Vergleichung des Menschen — und Affenschädels in frühen Entwicklungsstadien. (Cbl. d. d. Ges. f. Anthr., München, 1902, XXXIII, 153-156.) Discusses by means of models of the skulls of a macaque, a lutung, and a human embryo, the cranial resemblances and differences. The embryonic skulls of these apes have a typical interorbital septum. The observation of the nasal region indicates that the narrow-nosed forms have been developed from the broad-nosed.
- Gaudry (A.)** Contribution à l'histoire des hommes fossiles. (C. R. Ac. d. Sci., Paris, 1903, CXXXVI, 266-268.) Compares the "man of Mentone" with the modern Australian aborigine, and suggests similar ancestors for our race.
- Godin (P.)** Recherches anthropométriques sur la croissance des diverses parties du corps. (Bull. Soc. d'Anthr. de Paris, 1902, v^e s., III, 717-719.) Résumés the author's work *Recherches anthropométriques sur la croissance des diverses parties du corps* (Paris, 1903), based on 36,000 measurements of 100 subjects during their thirteenth to eighteenth years. Dr Godin had not noted any case of so-called "abdominal brown line" said to occur at the period of puberty.
- Hartland (E. S.)** The voice of the stone of destiny: an inquiry into the choice of kings by augury. (Folk-lore, Lond., 1903, XIV, 28-60.) Treats of the "coronation stone" (*lia fáil*), or "stone of Tara," election by dream-divination in Irish legend, Transylvanian divination by the crown, Buddhist divination tales, "first man met" tales, animal agent tales (elephant, *e. g.*, in East), "Pope Innocent" (outcast child tales), elections of bishops, birth-portents (Dalai

Lama), royal auguries, snakes as augurers of royalty, etc. The literary and folklore aspects of the subject are considered.

Holmes (W. H.) Classification and arrangement of the exhibits of an anthropological museum. (*J. Anthr. Inst.*, Lond., 1902, XXXII, 353-372.) Treats, with 8 figures, of the scheme now being adopted in the U. S. National Museum, Washington, embracing the biological, ethnological, and cultural aspects of man and the races of man, with special exhibits for individual purposes. The geo-ethnic, culture-history and special culture arrangements are discussed with some detail (Eskimo as example). A small map of geo-ethnic areas in North America is given on page 365.

Hommel (F.) Ueber den Ursprung unseres Alphabetes und seiner Anordnung. (*Cbl. d. d. Ges. f. Anthr.*, München, 1903, XXXIV, 44-45.) Argument for East Arabian (Chaldean) origin, not later than 2000 B. C. The original order was based on astrological ideas.

Kikuchi (J.) Das Gewicht der menschlichen Gehörknöchelchen. (*Z. f. Ohrenhkl.*, Berlin, 1902, XLI, 1-3.) Gives results of the examination of 741 human ear-bones. The average weight is greater in man than in woman. Greatest with the Chinese, least with the negroes of Africa. See also the author's *Untersuchungen über den menschlichen Steigbügel* (Weisbaden, 1902).

— Beiträge zur Anatomie des menschlichen Amboss. (*Ibid.*, 1902, XLI, 122-125.) This, bone is longest, broadest, and thickest in Chinese and Russians. It is proportionately greater in new-born than in adult Germans.

Klaatsch (H.) Ueber die Variationen am Skelete der jetzigen Menschheit in ihrer Bedeutung für die Probleme der Abstammung und Rassengliederung. (*Cbl. d. d. Ges. f. Anthr.*, 1902, XXXIII, 133-151.) Treats, with 22 figures, of the osseous variations (cranial, hands and feet, humerus, tibia, femur, vertebrae, ribs, etc.) in the races of men now existing and their evolutionary significance. There are in the skeleton no specifically Mongoloid, Negroid, or European characteristics, but only combinations of such in certain limits of variation. A "norm" will hold neither for the European nor for other races. Adaptation to the erect

posture has occurred differently with diverse races. The epithet "pithecoïd" is rather to be avoided, since the "lower" characteristics are no approach to any now living simian. The so-called "higher" characteristics have been acquired in manifold fashion and independently of one another during the spread of the human race. The present formation of the skull, etc., in Europeans, Mongoloids, and Negroids represents separate developments from a common root.

Koch (W.) Some corrosions found on ancient bronzes. (*Science*, N. Y., 1903, N. S., XVII, 152-153.) Discusses the "pale blue" and "pale green" excrescences found on Grecian and Egyptian bronzes in the Boston Museum of Fine Arts, due to exposure to a moist atmosphere.

Kollmann (J.) Die Rassenanatomie der Hand und die Persistenz der Rassenmerkmale. (*Arch. f. Anthr.*, Brnschw., 1903, XXVIII, 91-141.) Treats, with 1 table, 10 figures and bibliography, the race-anatomy of the hand, the Corcelettes finger-prints, the persistence of race-characteristics. Two forms of the hand are recognized, a broad and a narrow, correlated in the white race with broad and narrow faces. The Corcelettes finger-prints prove the existence of the Europeans for more than 5000 years. Since the neolithic period, or since ca. 10,000 years, no new race of man has appeared — the human races have been persistent since at least that time. Man is variable but not mutable. The crossing of human races produces no new varieties and no new types. The variability of man extends to the organs phylogenetically oldest. The old blood of the original stock adheres through all anomalies, effects of environment, *métissages*, etc.

Laborde, Jean-Vincent. (*Rev. d. l'Éc. de Anthr. de Paris*, 1903, XIII, 137-142.) Appreciation by George Hervé. List of honors and positions held. Notices from medical journals.

Lang (A.) Notes on ballad origin. (*Folk-Lore*, Lond., 1903, XIV, 147-161.) General discussion and re-statement of the author's position, called forth by remarks of Mr T. F. Henderson in the prefatory note to his new edition of *The Border Minstrelsy* (Edinburgh, 1902.) Lang's view is that

many ballads are not mere "degraded versions of literary mediæval romances," but "the work of popular rhymers, often dealing with themes also current in *märchen* of great antiquity, and not borrowing from literary sources."

Mantegazza (P.) Prime linee di psicologia positiva. (Arch. p. l'Antr., Firenze, 1903, XXXIII, 65-79.) Ninth and tenth sections treating of sexual love, jealousy, family-sense (paternal affection, fraternal affection), etc. The love of man differs from the love of the animal in that it is not confined to the fecund age alone. The ideal form of the human family is monogamous. Paternal affection is less necessary, less common and less intense than maternal. The Patagonian Tehuelches evince an extraordinary affection for their children. The Italian people in the matter of psychology are still in the period of alchemy. There is a proverb, "love of a brother, love of a knife."

Maurel (E.) Étude des conditions pouvant modifier la masculinité. (Rev. Sci., Paris, 1903, 4^e s., XIX, 424-431.) Discusses primogeniture, age of mother, marriage-birth interval, menstruation-fecundation, condition of parents, social status, masculinity, and natality (statistics), etc. Primogeniture, youth of parents, father especially, small marriage-birth interval, ovum-maturity, vigor of parents, all increase masculinity. The well-to-do classes have less masculinity, due to pathological influences.

Meyer (R. M.) Die Welte. (Arch. f. Kulturgesch., Berlin, 1903, I, 1-17.) Ethnological discussion of the wager, its origin and development. The wager is a sort of "mind or soul challenge." In an age when begging and giving were little in vogue, wagering was an important means of adding to one's property. It is one of the intellectual sides of play as well as of contest or battle.

Nutt (A.) Charles Godfrey Leland. (Folk-Lore, Lond., 1903, XIV, 162-164.) Brief appreciation of a many-sided and much-experienced man, folklorist among other things — died March 30, 1903.

— Gaston Paris. (Ibid., 164-166. Appreciation and list of works. Paris was the author of several works of a

folkloristic nature, particularly *Le petit Poucet et la Grand Ourse* (Paris, 1875).

Papillault (G.) Premières observations nécrologiques sur le Dr Laborde. (Rev. de l'Éc. d'Anthr. de Paris, 1903, XIII, 142-143.) Brief notes on the brain of Dr Laborde, the anthropologist. The weight (1234 gr.) is small, the convolutions generally little complicated.

Peet (S. D.) The earliest home of the human race. (Amer. Antiq., Chicago, 1903, XXV, 191-206.) General argument, with illustrations, to show that "the earliest home of the human race was in the very place where tradition and the scriptures have shown it to have been."

Rapport sur le concours du Prix Fauvelle. (Bull. Soc. d'Anthr. de Paris, 1902, v^e s., III, 798-799.) Prize awarded to M. Soury for his recent important work on the brain, with honorable mention of MM. Lapique and Dhéré, and bronze medal to M. Vaschide, the latter for his treatise on an anencephalous infant, the former for their studies on the relation between size of body and encephalic development.

Rapport sur le concours du Prix Broca. (Ibid., 799-802.) Prize awarded to M. Godin for his *Anthropométrie à l'âge de la puberté*. A bronze medal to M. Lesbre for his *Essai de myologie comparée de l'homme et des mammifères domestiques*. Another memoir submitted was Dr M. Baudoin's *Des Monstres doubles autositaires opérés et opérables*.

Regnault (F.) Sur la trépanation préhistorique. (Ibid., 736-738.) General discussion. Author thinks trepanning often due to medical procedures.

Reinach (S.) Le culte de l'âne. (L'Anthropologie, Paris, 1903, XIV, 183-186.) Treats of the pagan charge against the early Christians that they worshipped an ass's head and kindred folklore.

— La tiare de Saitapharnès. (Ibid., 237-248.) Résumés the discussions and disputes about the authenticity of the "tiara" of Saitapharnès in the museum of the Louvre.

— Les sacrifices d'animaux dans l'église chrétienne. (Ibid., 59-62.) Résumés the article of Conybeare, *The survivals of animal sacrifices inside the Christian*

- Church in the Amer. J. of Theol.*, 1903, 67-90. Sacrifices of animals, long continued in the eastern churches, still survive in the Iberian (Georgian) church of the Caucasus, the American church, and among the Nestorians, etc., of eastern Syria. The vegetarian tendencies of Greek philosophy are in part responsible for the gradual disappearance of animal sacrifices in the Christian church.
- Alexandre Bertrand. (Ibid., 100-103.) Biography and list of works of the late director of the Museum of St Germain, reproduced from the *Revue archéologique*. He was an authority on Celtic archeology.
- Schmidt (E.) Hermann Klaatsch's Theorie über die Stammesgeschichte der Menschen. (Globus, Brnswg., 1903, LXXXIII, 285-286.) Critical discussion of Klaatsch's monograph on *Entstehung und Entwicklung der Menschheit* in the second volume of H. Krämer's *Weltall und Menschheit* (Heidelberg, 1903). Klaatsch holds that the teeth and hand of man go far back in the mammal series, making him a truer representative in some respects of pre-human types than the other primates. He is no nearer related to the anthropoids than to the other primates. Schmidt welcomes Klaatsch's work as bound to start a healthy discussion.
- Schrader (F.) L'atmosphère. Les vents alizés. (Rev. de l'Éc. d'Anthr. de Paris, 1903, XIII, 69-80.) General account of the trade-winds and their influence on human commerce and civilization.
- Schwalbe (G.) Fontanella metopica und supranasales Feld. (Anat. Anz., Jena, 1903, XXIII, 1-11.) Discusses, with 2 figures, the views of Rauber in the previous volume and describes a marked case of "scar" of metopic fontanelle in the cranium of a three-year-old girl.
- Spitzka (E. A.) A study of the brain-weights of men notable in the professions, arts and sciences. (Phila. Med. J., 1903, repr., 1-14.) In this article, with tables, curves, and bibliography, the author discusses the brain-weights of 96 notable men. Hypertrophy, atrophy, hydrocephalus, errors of autopsy, etc., are considered. The average of the 96 distinguished individuals is 1473 gr.—the average age of 92 was 63 years. Included in the list are the following anthropologists: Mallery (1503), Ch. Letourneau (1490), Powell (1488), Broca (1484), G. de Mortillet (1480), A. Bertillon (1398), A. A. Hovelacque (1373),—7 individuals averaging 63 years of age, with average brain weight of 1459.3. The 21 cases from the United States and Canada average 1518 gr., heading the ethnic list.
- The post-orbital limbus; a formation occasionally met with at the base of the human brain. (Ibid., repr., 1-6.) Brief description, with 2 figures, of the occurrence of a "postorbital limbus," in 2 Papuan and one Japanese brain and the brain of "a distinguished American scientist."
- The brain of Saljeström. (Science, N. Y., 1903, N. S., XVII, 554.) Brief résumé of Retzius' account in the *Biologische Untersuchungen* for 1902 of the brain of Professor Saljeström, the eminent Swedish physicist and pedagogue (died 1892 aged 76). His splendidly developed brain, with normal asymmetry, weighed 1422 gr.
- Brain-weights of brothers and sisters. (Ibid., 516.) Cites after Kockel and Marchaud the brain-weights of a brother and two sisters (4½, 3½, 2 years) drowned together, and of three brothers (12½, 8, 4¾ years) suffocated by gas. Notes also the fact that the brains of the brothers Leidy (eminent man of science, physician) both weighed 1415 gr.
- Starr (F.) Mary Louise Putnam. (Ibid., 632-633.) Biographical sketch and account of patronage of Davenport Academy of Sciences.
- Stevens (R.) Industrial history. (Pratt Inst. Mo., Brooklyn, 1903, XI, 83-95.) Outlines, with 5 figures, the course in industrial history, based on the origin and development of primitive arts and inventions.
- Timmermans (A.) L'onomatopée et la formation du langage. (Rev. Sci., Paris, 1903, 4^e s., XIX, 395-400.) Discusses the experiment of Psammetichus (the conditions of child-language are more favorable), the opinions of Socrates in the *Cratylus*, argot, slang, etc.
- Verneau (R.) André Sanson. (Bull. Soc. d'Anthr. de Paris, 1902, v^e s., III, 720-722.) Appreciation of life and works of the anthropologist, A. Sanson, died Aug. 25, 1902.

— Rudolf Virchow. (Ibid., 722-723.) Brief appreciation.

Vernes (M.) L'histoire des religions et l'anthropologie. (Rev. de l'Éc. d'Anthr. de Paris, 1903, XIII, 144-164.) Discusses the question whether religion is susceptible of progress and whether history proves a progress of this sort. The author inclines more and more to a negative answer. There are no marks of a fecund transformation,—no appreciable difference between the animistic, fetishistic or naturalistic type, the polytheistic and the montheistic types. These are forms, not stages of religion. Modern Christianity, is hardly pure monotheism, not even as purely as Islam.

Windt (C.) Ueber das Erkennen der Menschen an den Fingerspitzen. (Stzgb. d. Anthr. Ges. in Wien, 1903, 66-68.) General discussion of the value of "finger-prints" (dactyloscopy) for the determination of the identity of individuals.

Wolkenhauer (W.) Dr Karl v. Scherzer. (Globus, Brnshwg., 1903, LXXXIII, 229-230.) Biographical sketch, with portrait, and notes on publications. Among Scherzer's works was *Aus dem Natur- und Völkerleben im tropischen Amerika* (Leipzig, 1864). His magnum opus was *Das wirtschaftliche Leben der Völker* (Leipzig, 1885).

Wollemann (A.) Das Ende der "Nephritfrage." (Ibid., 144-145.) Résumés recent literature and shows that the autochthonous theory of the origin of nephrite objects (Meyer, 1882) has been sustained as against the importation (from Asia) theory advanced by Fischer in 1875.

EUROPE

Abercrombie (J.) The oldest bronze-age ceramic type in Britain; its close analogies on the Rhine; its probable origin in central Europe. (J. Anthr. Inst., Lond., 1902, XXXII, 373-397.) An elaborate discussion, with 13 plates (figuring 95 beakers and 98 varieties of ornament) of "beakers" in ancient Britain of the oldest bronze age, the conditions under which they were found, etc., their distribution, ornament, etc., as compared with similar objects from the Rhine region. The "British beaker," the author thinks, arose in central Europe. The "beaker type" is almost unknown in Ireland.

Anutschin (D. N.) Russland in archäologischer Beziehung. (Int. Cbl. f. Anthr., Stettin, 1903, VIII, 65-73, 129-137.) Translated by T. Pech from the Russian Encyclopedic Dictionary (Vol. XXVIII, St Petersburg, 1900). A good résumé of Russian archeology. Neolithic remains are much richer than paleolithic in Russia, and man was widespread in Russia during the former period. In the metal age, the Siberian influence is strong, the western rather weak. In some parts of the country the iron age followed immediately the stone age. In southern Russia the "Scyths" dominated from the sixth to the second century, B. C. The Goths appear on the north coast of the Black sea in the second century, A. D. The "Sarmatians" who followed the Scyths are succeeded by the Slavs in the fifth or sixth century, A. D. (most marked in the ninth to eleventh century, when also Byzantine influences abound). By the eighth century, A. D., one can begin to speak of a "Russian" culture.

Ardu-Onnis (E.) Per la Sardegna preistorica. Nota 3ª. Le nuove contribuzioni. (Atti d. Soc. Rom. di Antr., 1903, IX, 15-93.) Résumés the most important recent publications on Sardinian archeology and prehistory and discusses the questions and problems involved, particularly Pinza's *I monumenti primitivi della Sardegna*. The author suggests a pre-dolmen Ligurian population in Sardinia. There has been more than one "Pelagian" invasion. Indeed, as Dr Ardu-Onnis remarks, "both from the number and variety of its monuments, the island of Sardinia does not yield in prehistoric times to Sicily as the crucible of the principal ethnic elements of the Mediterranean." The "culture of Oristano" is a new and unknown period in the prehistory of Sardinia.

Bardon (L.) et Bouyssonie (J. et A.) Un nouveau type de burin. (Rev. de l'Éc. d'Anthr. de Paris, 1903, XIII, 165-168.) Describes, with 3 figures, "a scraper with a lateral borer" from the "shelters" in the neighborhood of Brive, thought to be new to archeology.

Baudoin (M.) Objet de cuivre pur trouvé dans un mégalithe. (Bull. Soc. d'Anthr. de Paris, 1902, V^e s., III, 729.) Brief note on a pin of copper found in 1901 in the sands of the covered way of

the megalith "Pierre Folle," at Commequiers in Vendée. A more detailed account has been published by the author in the *C. R. Assoc. Française* for 1902.

Birkner (F.) Ueber die Hunde der Römer in Deutschland. (Cbl. d. d. Ges. f. Anthr., München, 1902, XXXIII, 157-162.) After a general discussion of the various prehistoric and modern races of dogs (a table of skull-measurement embodying the chief differences is given on page 162), Dr Birkner résumés the researches of Jeittles, Schloss, Krämer, etc., and concludes (from study of 14 skulls) that the dogs known to the Romans in Germany (6 figures) represent the following types: A small and a larger form of *Canis familiaris palustris*, the latter passing over to a third form resembling *Canis familiaris intermedius*; forms resembling the mastiff and shepherd dog types; also a sort of greyhound type.

Bolk (L.) Kraniologische Untersuchungen holländischer Schädel. Zugleich ein Beitrag zur Kenntnis der Beziehung zwischen Form und Capacität des Schädels. (Z. f. Morph. u. Anthr., Stuttgart, 1902, v, 135-180.) This article with 11 figures, based on the study of 302 Dutch skulls, treats of the skull form (the distribution of the different types shows *rapprochement* with the Reihengräber skulls), the relations between the cephalic index and absolute length and breadth, of length and height indices, content, etc. The height-index is of uncertain craniological value and its use causes many errors. The brachycephalic skulls exceed by a little the mesocephalic in capacity. According to cephalic indices the capacity-series shows two maxima, perhaps due to race-mixture.

Bourgeois (G.) Tumulus-dolmen de la forêt de Coupray, lieu dit "En Charmont," Haute-Marne. (Rev. de l'Éc. d'Anthr. de Paris, 1903, XIII, 133-135.) Brief description, with plan and cut of a tumulus-dolmen examined in July, 1902, and of the objects there discovered—fragments of skeletons, pieces of rude pottery, a polished axe, a knife, a scraper, a flint arrow-head.

Breuil (H.) Un torques en or découvert à Massigny, Vendée, etc. (L'Anthropologie, Paris, 1903, XIV, 173-182.) Describes with figures a golden torque, gold ear-rings and fragments of hollow

gold torques from the Vendée, etc., the first in detail.

Bruiningk (H.) Der Einfluss der Heiligenverehrung auf die Wahl der Taufnamen in Riga im Mittelalter. (Stzgb. d. G. f. Ges. u. Altsk. d. Ostseep. Russl., Riga, 1902 [1903], 77-83.) Author concludes that the adoration of saints in the Middle Ages had no special influence upon the choice of baptismal names.

— Ein liturgisches mittelalterliches Bronzebecken, die sogenannte Kaiser-Otto-Schale, etc. (Ibid., 108-149.) Detailed description and discussion, with 2 plates, of the so-called "Emperor Otto dish" (in the Cathedral Museum at Riga), found in excavations near Fellin in Livonia in 1886.

— Zur Frage der Verehrung der ersten livländischen Bischöfe als Heilige. (Ibid., 3-36.) Treats of the adoration of the first bishops of Livonia as saints, with numerous bibliographical references.

Brunner (—) Zur Forschung über alte Schiffstypen auf den Binnengewässern und an den Küsten Deutschlands und der angrenzenden Länder. (Cbl. d. d. Ges. f. Anthr., 1903, XXXIV, 1-13.) Treats, with 40 figures, of the old types of vessels of the Danube region: Dug-outs and plank-vessels of the Starbinger See (described by Rauch), the "Rohrschiff" and "Moosschiff" of the Kochelsee (Andree); the "Plätten" of the Chiemsee, the "Weidzille" of the Danube, Inn, etc. (Eysert, Schlesinger); dug-outs of the Plattensee (Traegor, Herman); vessels of the Save in Carniola (Müllner); dug-outs of the Save and tributaries (Schlesinger); prehistoric dug-out of lake-village of Dolnja-Dolina (Truhelka); Transylvania dug-outs and other vessels (Teutsch).

Bryce (T. H.) Note on prehistoric human remains found in the Island of Arran. (J. Anthr. Inst., Lond., 1902, XXXII, 398-406.) Describes, with plate and table of measurements, four skulls of the megalithic chamber-builders, and two skulls (previously recorded) of the short-cist builders, with notes on other osseous remains. The first set are markedly dolichocephalic, the others brachycephalic. The megalithic structures of Arran (a newly discovered one is briefly described) belong to the late stone age.

- Bugiel (W.)** Polnische Sagen aus der Provinz Posen. (Globus, Brnschw., 1903, LXXXIII, 127-130.) Cites items of Polish folklore relating to lakes, ponds, springs, water-spirits, will-o'-the-wisps, the devil, hidden treasures, localities, St Adalbert, etc. Based on *Wielkopolskie narwy polne* (Posen, 1901), a work, the result of the coöperation of more than 100 individuals, containing the discussion of more than 550 place-names in Polish Posen.
- Busuttl (V.)** Holiday customs in Malta. (Folk-Lore, Lond., 1903, xiv, 77-85.) Extracts by H. W. Underdown and Miss Margaret Eyre from Signor V. Busuttl's *Holiday Customs in Malta* (Malta, 1894).
- Capitan (L.)** Pierres et haches à cupules. (Rev. de l'Éc. d'Anthr. de Paris, 1903, xiii, 88-93.) Treats, with 7 figures, of pitted (cupped) stones and axes from various parts of France and England. The author suggests that the depressions on some of them may have been produced as a sort of funerary ritual to "kill" them. Some of the other holes are merely for hafting, etc.
- La station paléolithique de la Ferrassie, Dordogne. (Bull. Soc. d'Anthr. de Paris, 1902, v^e s., iii, 730-731.) Notes on finds—flints and other implements of the Magdalenian type; and in a lower stratum others of a Mousterian type.
- Cartailhac (É.)** Gravure inédite de l'âge du Renne. (L'Anthropologie, Paris, 1903, xiv, 179-182.) Describes, with figure, an engraved stone (two bands of horses) found in the grotto of Chaffand (Vienne) about 1840, and now in the Gaillard de la Donnerie collection.
- Chambroux (E.)** Le polissoir de Mézy-Moulins, Aisne. (Bull. Soc. d'Anthr. de Paris, 1902, v^e s., iii, 839.) Brief description, with figure, of prehistoric polishing-stone, with 21 striæ and 2 depressions, found at Mézy-Moulins.
- Chervin (A.)** Amulettes pour femmes enceintes et ex-voto. (Ibid., 806-809.) Brief description, with 7 figures, of an amulet (nude female bust) for women with child from Barcelona, Spain, and corresponding objects from other parts of the Mediterranean region, their symbolism, etc.
- Courty (G.)** E matières colorantes préhistoriques (Ibid., 840.) examinations of (manganese) fiction" of Lau coloring matte from the débris grotto of Eyzies
- Dames (M. L.)** Folk-lore of the Lond., 1903, x local legends, Mary, festivals, stitions, songs (6 fados). Co Azorean pastime tinct on the Por here. The ne marked. A M dence.
- Delisle (F.)** Vances en Langu Treats of the concerning the cock, the toad fleas, egg-worm of setting eggs sion M. Volk kindred Russian
- De' Rossi (G.)** e l'incremento periodo 1874-91 1903, XXXIII, 1 with 9 tables ar literature and De' Rossi show of recruits bor indicate a con crease in statu diinution in th the increase in t high statures, th medium and me ularizing of the crease in statum of more precc ment," rather t of the *final stati* normal, mediu for recruits b 1.625, 1.623, 1. of 1874-1878, meters.
- Doigneau (A.)** l'ancien cimetie Soc. d'Anthr. d

753-754.) Account of finding of skulls and other human remains (belonging to the thirteenth to fourteenth centuries) in the old cemetery of St Paul. Five skulls were sufficiently preserved to be presented to the Society.

Du Chatellier (P.) Un âge du cuivre ayant précédé l'âge du bronze a-t-il existé en Armorique? (Rev. de l' J. d'Anthr. de Paris, 1903, XIII, 169-172.) Criticises the paper of M. de la Grancière,—noticed in *American Anthropologist*, 1902, N. S., IV, 312,—and produces evidence in favor of the existence of an Armorican copper age.

Fairbanks (A.) Aristophanes as a student of society. (Amer. J. Soc., Chicago, 1903, VIII, 655-666.) Under the rubrics: the elements of social life, the family and the state, property and economic questions, the author points out the importance of the data in the comedies of Aristophanes for our knowledge of the political and social life of Athens in the fifth century B. C., and their discussion by men of learning.

Fischer (E.) Ein steinzeitliches Höckergrabfeld in der Nähe von Freiburg i. Br. (Cbl. d. d. Ges. f. Anthr., München, 1903, XXXIV, 20.) Note on graves of the stone age with "squatting skeletons"—in the hand of one were a flint and a flint knife. An urn was also discovered.

van Gennep (A.) Notes sur les domovoi. (Rev. de l'Hist. d. Relig., Paris, 1903, repr. 1-16.) Treats, with references to Léger, Zvonkof, Afanasief, Kolcin, etc., the *domovoi*, beings of Russian folklore more complex and diverse in origin than the Latin *penates*, with whom they have been compared—they are more than "household gods" or "ancestral spirits." They have certain relations to snakes, horses, cattle, poultry, etc., and have various human and animal forms; they are not confined to the hearth or even to the house. Some of them are doubtless of animal origin, perhaps totemistic.

Giuffrida-Ruggeri (V.) Nuovo materiale scheletrico della caverna di Isnello. (Atti d. Soc. Rom. di Antr., 1903, IX, 5-14.) Brief account, with 2 figures, of the new osseous material of the Isnello cavern (see *Amer. Anthr.*, 1902, N. S., IV, 771), particularly 13 tibiae and

36 femora in a fit state for measurement. The frequency of the pilaster is noteworthy; also platymery and platycnemia. Some of these morphological phenomena may represent differences between paleolithic and neolithic man.

— **Animali totem e animali medicinali.** Contributo allo studio delle superstizioni popolari in Italia. (Ibid., 161-173.) Treats of "totem animals" (wolf, hen, serpent, etc.) and "medicinal animals" (hen, cock, wolf, snake, viper, dog, lizard, toad) in the folklore of ancient and modern Italy. The author holds, with Reinach, that "theriolatry is intelligible only as the survival from a primitive totemism," and the same explanation suits for its last remains—"popular superstitions" (folklore).

Hoernes (M.) Das Campignien. Eine angebliche Stammform der neolithischen Kultur Westeuropas. (Globus, Brnschw., 1903, LXXXIII, 139-144.) Résumés evidence and arguments (with 24 figures) for the consideration of the so-called Campignien "culture," represented especially in the prehistory of northern France, as the original form whence proceeded the neolithic culture of western Europe. The "transition-phenomena" of Upper Italy and southern and northern France represent the relations between the old native culture and the intruding real neolithic.

Hofer (P.) Die indogermanische Frage durch die Archäologie beantwortet. (Ibid., 154-156.) Résumés the article of Kossinna on the same topic.

Jaeger (J.) Innsbruck. Eine erdgeschichtliche Betrachtung. (Ibid., 157-160.) Pages 159-160 treat of the prehistoric and mediæval inhabitants, place-names, etc. Etruscan, Teutonic, Celtic, etc. elements are represented.

Jouron (L.) Haches emmanchées trouvées enfouies, isolées de toute sépulture et de toute squelette. (Bull. Soc. d'Anthr. de Paris, 1902, v^e s., III, 850-853.) Discusses the problems suggested by the finding, *e. g.*, at Villers-aux-Bois, of hafted axes 80 cm. below the surface with no trace of skeleton or burial. About a dozen such discoveries have been made.

Klaatsch (H.) Anthropologische und paläolithische Ergebnisse einer Studienreise durch Deutschland, Belgien und

- Frankreich. (Z. f. Ethnol., Berlin, 1903, xxxv, 92-132.) Treats with seven figures and four plates, of visits to Furfooz, the "stations" of the Dordogne, the Vézère valley, Cro-Magnon, the grottos of Font de Gaume Combarelles, the "stations" of Le Moustier, La Madeleine, etc., Chelles, Rutot's collection of "eoliths" in Brussels, the "stations" of Taubach, Puy Coumy, etc., with expressions of personal opinion concerning investigators, their researches, etc., and the results of personal examinations on the spot.
- Koepp (F.)** Die Ausgrabungen bei Haltern. (Cbl. d. d. Ges. f. Anthr., München, 1902, xxxiii, 130-133.) Brief account of recent excavations at Haltern on the Lippe, where a Roman camp and other remains were discovered. Haltern is identified by some with the Roman castellum of *Aliso*.
- Krause (E. H. L.)** Kann Skandinavien das Stammland der Blonden und der Indogermanen sein? (Globus, Brnschw., 1903, lxxxiii, 109-110.) Argues against a Scandinavian origin of primitive blonds and Indogermans. The early Scandinavians were immigrants from some region to the south.
- Laville (A.)** Réponse à M. Rutot sur son étude géologique et anthropologique dugisement de Cergy. (Ibid., 742-749.) Reply to article of M. Rutot. The *dépot* of Cergy is Acheulean, under which name ought to be united what are now known as Chellean and Acheulean.
- et **Gennetier (M.)** Silex taillés (types chelléen, moustérien, et néolithique) recueillis en place par M. Gennetier, Canière Dauphin, à Ivry-Port. (Bull. Soc. d'Anthr. de Paris, 1903, v^e s., iii, 841.) Brief account of the discovery of "coups de poing" of the Chellean type, a moustierian flint, and a jadeite (?) axe from a quarry at Ivry-Port in what seem to be "paleolithic" strata.
- Lefèvre (A.)** Apogée de Charles V; 1377-1378. (Rev. de l'Éc. d'Anthr. de Paris, 1903, xiii, 101-121.) Historico-ethnographic sketch of the times of Charles V of France at their zenith—court, private life, etc.
- Manning (P.)** Stray notes on Oxfordshire folk-lore. (Folk-lore, Lond., 1903, xiv, 65-74, 167-177.) Treats, with 2 plates, of ghosts, suicides, seasonal festivals, Shrovetide, May Day, Whitsun Ales; Fifth of November, etc. See also pages 183-188.
- Manouvrier (L.)** Étude sur les rapports anthropométriques en générale et sur les principales proportions du corps. (Mém. Soc. d'Anthr. de Paris, 1902, 3^e s., ii, 1-203.) Among the numerous conclusions (based on the study of 50 male and 50 female bodies of Parisian French), with 12 figures and 27 tables of measurements, are: Increase of stature generally carries with it increase of all parts of the body; the limbs and their parts increase relatively more than the bust; the arms increase relatively less than the legs and become relatively shorter—so all distal as compared with proximal parts; in tall men the hand decreases a little relatively as compared with the foot, in tall women it increases a little; generally those who have long legs have also long arms; in women, even more than in small-statured men, the limbs and their parts relative to the trunk are shorter than in men; women in general have the trunk long relative to the leg, but, with equal stature, have the bust shorter than men, but the trunk about equal. An accentuation of evolutionary traits is seen in the feminine proportions of the arm and extremities (tending to become more accentuated in cities, and to appear also in man, as a result of diminution of muscular work).
- Martin (A.)** Un vase néolithique dans les couches alluviales de la Seine. (Rev. de l'Éc. d'Anthr. de Paris, 1903, xiii, 135-136.) Brief account, with figure of a fragment (all now left) of a neolithic vase discovered in 1884 in the alluvium of the Seine, with details of situation where found.
- Matiegka (H.)** Crânes d'ossuaires; oeufs de Pâques tchèques. (Bull. Soc. l'Anthr. de Paris, 1902, v^e s., iii, 750-752.) Brief notes on the origin of 20 ancient Bohemian skulls from the ossuaries of Sedlec, Melnik, Pěna-Horní, etc., presented by M. Matiegka to the society. Also brief description of some "Easter eggs" from Bohemia presented at the same time.
- Mehlis (C.)** Exotische Steinbeile der neolithischen Zeit im Mittelrheinlande. (A. f. Anthr., Brnschw., 1902, xxvii, —.) Describes with figures a stone idol in the form of an axe from Drusenheim in lower Alsatia and three axes of

jadeite from Speyerdorf, Frankenthal, and Schettstadt. The form (a stooping woman) of the idol and its polish lead the author to look toward Egypt (through trade) as the source of this curious object, while the axes of jadeite are referred to central Asia.

de Mortillet (A.) Les silex taillés trouvés dans les cimetières mérovingiens. (Rev. de l'Éc. d'Anthr. de Paris, 1903, XIII, 81-87.) Treats, with 4 figures and list of places of occurrence, of the finds of chipped flints in Merovingian graves—at this period flints seem still to have been cut for fire-flints. Of the other flints found many are accidentally present (due to former occupancy of the burial places), while others have been placed there for superstitious reasons.

Much (M.) In eigener Sache. (Z. f. Ethnol., Berlin, 1903, XXXV, 73-74.) Reply to statements of Dr Kossinna re Indogermanic archeology.

Oppert (G.) Tharshish und Ophir. (Ibid., 50-73.) Geographico-philological study with numerous references to the ancient literature of the subject, citation of Biblical passages involved, discussion of theories, etc. The author recalls and supports with new arguments the theory of Movers which identifies Tartessos and Tarshish with Turdetania in Spain.

Papillault (G.) L'homme moyen à Paris, variations suivant le sexe et suivant la taille. (Bull. Soc. d'Anthr. de Paris, 1902, v^e s., III, 393-526.) This valuable monograph, with 6 figures and 36 tables of measurements, treats in detail of 100 male and 100 female bodies studied at the Academy of Medicine. After a general introduction on anthropometrical technique, etc., the author considers, from the points of view of sex and stature-differences, absolute measurements and proportions of trunk, pelvis, clavicle; general morphology of trunk; proportions, etc., of arms, legs, hands, feet; cranial and facial measurements, indices, etc. The average stature for males was 1674 mm., females 1564 mm.,—stature and sex exercise no influence on the dorsal and lumbar curves. Stature modifies the pelvis much less than sex. The legs are relatively shorter in women (due to reduction of length of thigh by influence of pelvis,—the proportions of thigh and leg are little modified by stature. When the arm is more developed the increase appears in the fore-arm. Breadth, height and length of head are about equally independent of stature. Cranial height is weak in woman, but considerable in children.

Pech (T.) Die epische Volkspoesie an der Petschora. (Globus, Brnschw., 1903, LXXXIII, 156.) Résumés an address by N. E. Ontshukof, who traveled on the lower Petchora in 1902. From the Russian people of that region he obtained 89 epic songs or *bylins*, 15 religious songs, 44 other songs, and 50 *märchen*, and brought back with him also some 50 Mss. The *bylins* probably came to the Petchora with the exiles of the sixteenth to seventeenth centuries. The Syrjanians, who have lost most of their own poetry, sing *bylins* in broken Russian, but the Samoyeds sing them on native subjects in their own tongue.

Piette (É.) Gravure du Mas d'Azil et statuettes de Menton. (Bull. Soc. d'Anthr. de Paris, 1902, v^e s., III, 771-779.) Treats, with 4 figures, of an engraving of a simioid or anthropomorphic creature discovered in the cavern of Mas d'Azil, the posture of which is such as to indicate erect carriage and use of bipedal locomotion—the other side of the bone contains a sketch of a man and some animals (in part). Also of the ivory statuettes discovered at Brassempouy and Mentone. One of these, the author thinks, represents a Neanderthaloid type, with a Pharaonic head-dress. Another from Mentone figures an hermaphrodite, a third a steatopygous woman. Negroid races probably lived in Europe at the time of these statuettes.

— Sur une gravure du Mas d'Azil. (C. R. Ac. d. Sci., Paris, 1903, CXXXVI, 262.) Brief description of an "imaginary being" in a human attitude engraved on a piece of shoulder-blade from Mas d'Azil now in the St.-Germain Museum. The figure holds a *bâton* and seems to be dancing before a bear.

Pittard (E.) Dix-neuf crânes d'Ems, Vallée du Rhin. (Bull. Soc. d'Anthr. de Lyon, 1902, XXI, repr. 1-16.) Details of measurements of 19 skulls from Ems in the Grisons—mostly brachycephalic (av. 83.43) of the "Celtic" type, with good cranial capacity (av. 1663 ccm.; range 1455-1855 ccm.), and rather heavy.

- Ethnographie de la Dobrodja. Contribution à l'étude anthropologique des Kurdes. (Ibid., repr. 1-12.) Details of measurements (cranial, facial) of 15 Kurds from Constantza on the Black sea, compared with the data in Chantre. These Kurds are brachycephalic (av. 86.10), brown-eyed, black-haired (85%)—the least dark are the most brachycephalic.
- Quelques nouveaux crânes grisons de la vallée du Rhin. (Ibid., 1903, XXI, repr. 1-19.) Details of measurements of 6 skulls from Somvix, 2 from Trons, and 3 from Tavanasa. These skulls are brachycephalic (av. 83.92), of good capacity (av. 1574 ccm.), rather heavy, and of the "Celtic type."
- Poutjatine (P.)** Station nouvelle sur les bords sud du lac Bologoié. Atelier de fabrication des outils et armes en pierre. Fouilles de 1901 et 1902. (Ibid., 755-756.) Brief account of the discoveries of flints at the "station" of Visokoé, a primitive "flint-factory,"—the dwelling-place was at Bologoié. No polished flints occur and fine arrowpoints are rare.
- Schliz (A.)** Nochmals zur bandkeramischen Frage. (Cbl. d. d. Ges. f. Anthr., München, 1903, XXXIV, 13-15, 23-24.) Reply to article of Köhl, criticizing author's views on the subject of "Bandkeramik."
- Schrader (F.)** Survivance de coutumes endogamiques dans la vallée de la Garonne. (Rev. de l'Éc. d'Anthr. de Paris, 1903, XIII, 175-176.) Notes the survival at Sainte-Croix-du-Mont of a ceremony at the marriage of a girl of the village to a stranger, which involves the "ransom" of the bride.
- Bracelets métalliques bulgares de forme antérieure à l'emploi des métaux. (Ibid., 173-174.) Describes, with figure, a Bulgarian (worn by women of mountains about Sofia) bracelet of bronze, etc., the form and adornment of which "have undergone no modification since metals replaced bones and shells in the making of human ornaments."
- Strack (A.)** Die macedonischen Seen. (Globus, Brnswgw., 1903, LXXXIII, 213-219, 238-243.) On page 239, with figure, are described the primitive dug-outs of the fishermen of Lake Ochrida. On page 240 a legend of Lake Nissia.
- Tetzner (F.)** Seelen und Erdmännchenglauben bei Deutschen, Slawen und Balten. (Ibid., 235-238.) Treats of the German-Slavic-Baltic views of dwarfs, subterranean beings, etc., chiefly with reference to the statements of Hennig.
- Thieullen (A.)** Le préchelléen en Belgique. (Bull. Soc. d'Anthr. de Paris, 1902, 4^e s., III, 756-767.) Discusses the "retouched flints," "pierres-figures," etc., of M.M. Rutot and Boucher de Perthes and the handiwork of man in the "pre-Chelleian" age in Belgium.
- Traschio (G. B.)** Un caso di macrosomia. (Atti d. Soc. Rom. di Antr., 1903, IX, 95-150.) Detailed description, with a wealth of anthropometric data and 5 figures, of the gigantic skeleton in the Anatomical Institute of Turen, doubtless that of Giacomo Borghello of Carrega, who is noted in 1837 by Bertinatti as a Piedmontese giant, known also as the "Ligurian giant"—his body was measured by Demichelis (stature 2.16 m. as compared with Trascio 2.10 on skeleton). The cranial capacity is 1910 ccm., cephalic index 80 (head rather small considering stature). Pages 127-147 are taken up with comparisons of the measurements of other giants. The author concludes that Borghello was a real giant—"gigante, assoluto, gracile ed appartenente alla categoria dei *neanion-macrosomi*,"—whose extraordinary development dates from his fourteenth year. The cranial capacity shows that that element does not always vary inversely as the stature.
- Vram (U. G.)** Crani della Carniola. (Ibid., 151-159.) Describes, after the Sergi method, with five figures and detailed table of measurements and table of geographical and archeological distribution (the range is from the palafitta of Ig, more than 1000 B. C., to beyond the sixteenth century), 71 crania from various parts of Carniola, now in the Lubiana museum. Of these 12 are dolichocephalic, 25 mesocephalic, and 34 brachycephalic; 5 are microcephalic in regard to cranial capacity and 13 megalcephalic. In the palafitta of Ig illipsoid, ovoid, and pentagonoid varieties were all found, with no traces of cremation.
- Weber (F.)** Vorgeschichtliche Ueberreste aus Baiern in ausserbairischen Sammlungen. (Cbl. d. d. Ges. f. Anthr., 1903, XXXIV, 17-20.) Lists collections

of Bavarian antiquities in Stuttgart, Ulm, Karlsruhe, Mainz, Wiesbaden, Coburg, Meiningen, Jena, Dresden, Hannover, Bonn, Erbach.

Weissenberg (S.) *Kinderfreud und -leid bei den südrussischen Juden.* (Globus, Brnschw., 1903, LXXXIII, 315-320.) Treats, with four figures, of joy and sorrow over children among the Jews of southern Russia. Care of the suckling (well and ill), amulets, growth, sneezing and yawning, children's diseases, teething, education (rather ascetic and prohibitive), instruction in the Cheder (Jewish school), play—a list of the varieties of the astragal-game is given, festivals, etc., are discussed. On page 318 is an interesting counting-out rhyme. When he has completed his thirteenth year the boy is religiously a "man."

— *Weitere Entdeckungen zur Vorgeschichte Kretas.* (Ibid., 267-268.) Résumés Evans' researches at Knossos in 1902 and those of Bosanquet in the plain of Palæocastro.

Wilser (L.) *Anthropologie suecica.* (Ibid., 95-98.) Critical résumé of Retzius and Fürst's *Anthropologia suecica* (Stockholm, 1902) with comparisons with the data of Hultkrantz and the measurements of prehistoric skulls. The cephalic index has scarcely risen a unit since the stone age. Since the investigation of Hultkrantz the average height of the Swedish recruits (21 years old) has apparently increased 1 cm. As to color of hair and eyes, the Swedes seem to be the lightest of all peoples. Wilser thinks that Sweden was the primitive home of the Aryan race.

Wunder (L.) *Vorgeschichtliche Studien in nördlichen Bayern.* (Z. f. Ethnol., Berlin, 1903, xxxv, 142-153.) Treats, with five figures, of the significance of the north Bavarian grave-mounds (they were cemeteries, used for centuries, and increasing in size by this use), the age-place of the cremation-graves in the north Bavarian grave-mounds (they belong to the oldest iron age and so form the north Bavarian transition-stage between the bronze and iron ages).

AFRICA

Anthony (R.) et **Huguet** (J.) *Étude analytique et critique de l'ouvrage: "Les races humaines du Soudan français,"*

de M. Sarrazin. (Bull. Soc. d'Anthr. de Paris, 1902, v^e s., III, 842-849.) Rather unfavorable critical résumé of Dr H. Sarrazin's recent volume, *Les races humaines du Soudan français.*

Azoulay (L.) *Un jouet religieux.* (Ibid., 698-699.) Describes briefly a noise-making toy of the Algerian Jewish children, now rare, used only at the Purim feast in connection with the cursing of Haman.

Berthelet (M.) *Egyptian gold.* (Amer. Antiq., Chicago, 1903, xxv, 178-180.) Translated from the French by C. A. Brasseur. Gold leaves of the sixth dynasty contain 92.3 percent gold, those of the twelfth 90.5 percent, and those of the Persian epoch 99.8 percent.

Boussac (P. H.) *Les diverses espèces de serpents dans l'Égypte antique.* (Rev. Sci., Paris, 1903, 4^e s., XIX, 336-340.) Treats of the *haje* (*naja*) or asp, the pyramid scytalus, the viper and the python, their representation on the ancient monuments, etc.

Brunhes (M.) *Les oasis du Souf et du M'zab comme types d'établissements humains.* (La Géographie, Paris, 1902, v, 5-20, 115-195.) A good study of the desert environment which leads to a higher culture by the best use being made of unfavorable surroundings. Human intelligence, industry and art are all advantaged by these adverse conditions.

Cole (H.) *Notes on the Wagogo of German East Africa.* (J. Anth. Inst., Lond., 1902, xxxii, 305-338.) Brief answers to the 213 questions—tribes, birth, descent, adoption, puberty (pages 308-310), marriage (pages 310-312), disease and death, murder, property and inheritance, fire (legend of fire-getting), food, hunting and fishing, agriculture, war, government, oaths and ordeals, salutations, arithmetic, records, measurement of time, games and dances, magic and divination (pages 324-327), doctrine of souls, scape-goats, demons, spirits, astronomy, traditions (frogs and rain; hyena and hare; death; hare and chameleon; man, lion and frog; lion and badger), sacrifice, superstitions, etc.,—of Dr J. G. Frazer's *Ethnological Questions*. The lists of clan names and month names are interesting. There is much excellent information in this compact article.

- Costa (E.)** Administração civil nas nossas colonias africanas. (Bol. Soc. de Geogr. de Lisboa, 1903, 535-761.) A general account of civil administration in the Portuguese colonies in Africa.
- Desplagnes (L.)** Etude sur les tumuli de Killi dans la région de Goundam. (L'Anthropologie, Paris, 1903, XIV, 151-172.) Describes, with 37 figures, the tumuli of Killi in the Goundam region of the Niger, their contents, etc., explored 1896-1901. Among the finds were stone implements, terra-cotta pottery and figurines, iron objects, ornaments and figures of copper and bronze, beads, etc. The author concludes that the people who built these tumuli were probably those spoken of by El Bekri, an Arab writer who visited this country in 1050 A. D. They knew the art of glazed pottery and were very artistic manufacturers of bronze. M. Desplagnes suggests a Libyan or Garamantic origin.
- Ferraz (I.)** As perolas e a sua pesca em Moçambique. (Bol. Soc. de Geogr. de Lisboa, 1903, 1-20.) General account of pearl-fishing on the Mozambique coast. The divers always plunge head-first, naked.
- Garner (R. L.)** Native institutions of the Ogowé tribes of west central Africa. (J. Afric. Soc., Lond., 1902, 369-380.) Treats sympathetically of the native belief in charms and amulets (leopard's claw, crocodile's tooth, carvings on canoes and paddles, snake venom, plant medicine, etc.), witchcraft and related ideas. The Ogowé relies on the material, not the spiritual, element of these things. An interesting account is given of the *Yassi* image or "primitive detective," taken by the missionaries for a mere idol, whose rôle suggests some of the procedures of the famous Lorenzo Dow. *Yassi*, the author thinks, is "a very useful and valuable institution—an active and efficient ally of law and order," for which the whites may furnish ill substitutes.
- Gentz (Leut.)** Einige Beiträge zur Kenntnis der südwestafrikanischen Völkernschaften. (Globus, Brnswig., 1903, LXXXIII, 297-301.) Gives, with 14 figures, results of observation among the Bushmen of the Kalahari during a seven months' stay on the extreme eastern frontier of German southwestern Africa. Only such things as are not to be found in Fritsch, v. Hellwald, and Schinz, or differ from the objects noted by them are discussed. The bows are carefully made, and no arrows with steel points were found. Quiver and hunting outfit are described; also pits and traps, fire-making, domestic utensils, etc., are described and figured. The use of the bow as a musical instrument is recorded.
- Graf (T.)** Antike Porträts. (Stegab. d. Anthr. Ges. in Wien, 1903, 65.) Notes further resemblances between the author's collection of ancient portraits and the numismatic heads of the Ptolemies.
- Guyot (Y.)** Les coutumes indigènes de la Côte d'Ivoire. (Bull. Soc. d'Anthr. de Paris, 1902, v^e s., III, 810-817.) Résumé of F. J. Clozel and R. Villamur's recent work on *Les coutumes indigènes de la Côte d'Ivoire*, giving the primitive pandects of the natives of the Ivory Coast of western Africa. This valuable monograph treats of civil and criminal law, judiciary organization, procedure, etc. The collision between Islam and fetishism is a most interesting phenomenon.
- Hetherwick (A.)** Fetish worship in Central Africa. (Folk-lore, Lond., 1903, XIV, 61-63.) Brief notes on Bantu fetishism, with description (plate) of an Achewa fetish-doll.
- Huguet (J.)** Les soffis. (Rev. de l'Éc. d'Anthr. de Paris, 1903, XIII, 94-99.) General account of *soffis* or "unions," "parties" among the Arabs and Berbers of Algeria, Tunis, etc. Some of the large *soffis* break up into secondary *soffis*. The rôle of the *soffis* in the history of Arabs and Berbers is very important.
- Junod (H. A.)** Some remarks on the folk-lore of the Ba-thonga. (Folk-Lore, Lond., 1903, XIV, 116-124.) Treats of native copper money (*lirale*), popular tales (English text of tale of "Men and Women of the Old Times"), amulets, superstition, divination (use of bones, shells, etc.). The author, a missionary for seven years among the Ba-ronga, a Zulu tribe of Delagoa bay, has treated these matters more in detail in his works—*Les Chants et les Contes des Ba-Ronga* (Lausanne, 1897), *Les Ba-Ronga* (Neuchâtel, 1897), etc.
- Klose (H.)** Das Bassarivolk. (Globus, Brnswig., 1903, LXXXIII, 309-314, 341-345.) General account, with 6 figures

of the Bassari, a primitive people of German Togoland. Physical characteristics (tall, strong, well-built), tattooing (as children), diseases, clothing (very scanty), ornament, weapons, houses, domestic life, marriage, birth, twins (if of same sex, weaker killed), illegitimate children (brought up like others), slaves (an important social factor), etc., are treated. The Bassari number some 35-45,000, and by slavery and intermarriage with the Kabre, Shausho, etc., include a foreign element.

Kollmann (J.) Die Gräber von Abydos. (Cbl. d. d. Ges. f. Anthr., München, 1902, XXXIII, 119-126.) Résumés, with 5 figures and bibliography, the results of recent researches in ancient Egypt, with respect to human races. The author estimates the proportionate numbers of the various types as follows: Puntis 10%, Nubians 20%, Libyans 18%, Ethiopians (Negroes) 12%, Pigmies 20% *métis* 22%. We know now that the development of Egyptian civilization is not the product of a single type or of one race only, but as the result of the coöperation of several types. Variety of types within a people seems fertile for higher culture.

Moggridge (L. T.) The Nyassaland tribes, their customs and their poison ordeal. (J. Anthr. Inst., Lond., 1903, XXXII, 467-472.) Treats of the Manganja or Amyassa, Achikunda, Ajawa, Angoni, Atonga, Angura, their religious ideas and practices. The Ajawa have puberty ceremonies. The muavi-bark poison ordeal (drink) is believed in by all the Nyassa tribes known to the author. The old-fashioned trial is uncommon now. Muavi was much used in witchcraft trials.

Moraes e Castro (J.) De Noqui ao Cuango, notas de viagem. (Bol. Soc. de Geogr. de Lisboa, 1903, 81-94.) Contains some notes on the Muchicongos, Zombos, Quicongos and Iacas, religion, medicine, dress and ornament, social functions, marriage, etc. The Muchicongos have few idols. Their circumcision-ceremonies are described. The habit of filing the teeth is said to affect their speech.

v. Schkopp (E.) Zwergvölker in Kamerun. (Globus, Brnschw., 1903, LXXXIII, 284-285.) Brief account of the Bako, a small-statured (1.50 cm.), black, primitive tribe of the forests in the Bakoko territory of the Cameroons,

probably the autochthones of the country. They are creatures of the primeval woods, and are feared by their neighbors who believe them possessed of magic powers.

da Silveira Magalhães (F.) Sobre alguns costumes de S. Thomé. (Bol. Soc. de Geogr. de Lisboa, 1903, 113-116.) Notes from unprinted documents prior to 1850 on superstitions and fetishism on the island of St. Thomas.

Thomé (P.) Die Götzen am Kilimandscharo. (Globus, Brnschw., 1903, LXXXIII, 231-234.) Describes, with seven figures, some twelve idols of the Wajagga from Mt Kilimanjaro and the offerings made to them. Characteristic is the action of the native, who gave his *nungu* (idol) to the missionary with his remarks in a vain effort to get it back. All these idols are of clay, and they are in human and animal form.

ASIA

Adachi (B.) Ueber den Penis der Japaner. (Z. f. Morph. u. Anthr., Stuttgart, 1902, v, 351-356.) Treats of differences between the penis of the Europeans and Japanese. The latter mostly have the glans perfectly uncovered, rarely *kawakamuri* ("skin covered") as is the European. But the baring of the glans by secret means is almost general among Japanese. Circumcision, though it may have prevailed in ancient times, is not now known in Japan. A sort of infibulation prevails among Japanese wrestlers, and a case of tattooing the glans in a gambler is reported.

Annandale (N.) and Robinson (H. C.) Some preliminary results of an expedition to the Malay peninsula. (J. Anthr. Inst., Lond., 1902, XXXII, 407-417.) Ethnographic notes (obtained in 1901), with sketch map and plate of types. The civilized tribes considered are the Malayo-Siamese of the east coast states, the Malays of South Perak, Selangor, Kedah, Upper Perak, Ulu Rhaman, the Sam-sams of Trang, etc. Of uncivilized the Orang Laut Kappir of Trang, the Semongs, Sakais, etc. A table gives cephalic index, nasal index and stature of the various groups studied — in all some 400 individuals (90 from the wild tribes), nearly all males, twenty to fifty years old, were measured. The Orang Laut Kappir are to some extent forsaking their

- sea-faring life and settling on the islands. The Semangs are a fairly pure race, but the Sakais are of mixed Semang and Mongoloid (?) blood. The Sakais, through the opening up of the country, have recently come into contact with the Malays. The Sakais are taller than the Semangs and more dolichocephalic.
- Bloch (A.)** Quelques remarques sur l'anthropologie des Indous exhibés au Jardin d'Acclimatation. (Bull. Soc. d'Anthr. de Paris, 1902, v^e s., III, 780-787.) Anthropological notes of a general sort on the physical characteristics (form of nose, color of skin, hair, eyes, mouth and lips, muscular system, bony structure, height, etc.) of some 50 "black Hindus," of mixed nationalities, but mostly from the Malabar coast and of Dravidian stock.
- Chervin (A.)** Sur le sens de la circonscription des lèvres dans la Bible. (Ibid., 841-842.) Note in reply to critique of M. Garnault.
- Clay (A. T.)** Professor Hilprecht's recent excavations at Nippur. (Rec. of Past, Washington, 1903, II, 47-62.) Résumés, with 12 illustrations and portrait of Professor Hilprecht, the results of explorations in 1899-1900 recorded in detail in Professor Hilprecht's *Explorations in Bible Lands*.
- Clement (E. W.)** The new woman in Japan. (Amer. J. Soc., Chicago, 1903, VIII, 693-698.) Treats of the "legal new woman," created by the new Japanese civil code, according to Gubbins' translation. The author considers that the improvements in her legal position will not immediately change in any great degree woman's social status in Japan.
- Cumont (F.)** The mysteries of Mithra. (Open Court, Chicago, 1902, XVI, 65-68, 167-174, 200-208, 340-355, 449-458, 522-535.) An interesting general account of the origin and spread of Mithraism and its invasion of Europe.
- Dames (M. L.)** Note on Major Sykes's Gypsy vocabulary. (J. Anthr. Inst., Lond., 1902, XXXII, 350-352.) Shows that this Gypsy "language" is "rather an artificial secret dialect or jargon, such as prevails among similar tribes in India, the Changars, Doms, etc." The Indian element is less than ten percent. The grammar is based on Persian.
- De Morgan (J.)** Note sur les âges de la pierre dans l'Asie antérieure. (Bull. Soc. d'Anthr. de Paris, 1902, v^e s., III, 708-716.) Résumés discoveries of the paleolithic and neolithic ages in Asia Minor, with particular reference to the excavations at Susa (a table of strata, cuts, etc., is given). The Susian obsidian comes from the Caucasus. The oldest Susian pottery is the finest. The Chaldean cities are built upon spots inhabited from time immemorial — every tell is historic and prehistoric.
- Discussion sur le crime rituel.** (Ibid., 731-738.) Continued from previous number. Letters by MM. Danjou, Garnault and Girard de Rialle. See *American Anthropologist*, 1902, N. S., IV, 551.
- d'Enjoy (P.)** Les signes extérieurs du deuil. (Rev. Sci., Paris, 1903, 4^e s., XIX, 496-498.) General discussion of outward signs of mourning among the races of mankind, but chiefly (497-498) among the Annamese — the six stages are described with respect to the clothing worn.
- Esteves Pereira (F. M.)** Vida de S. Gregorio. (Bol. Soc. Geogr. de Lisboa, 1903, 851-892.) Geez text and Portuguese translation, with notes of a life of St Gregory, telling the story of the conversion of the Armenians.
- Excavation of the ruins of Babylon.** (Rec. of Past, Washington, 1903, II, 144-151.) Part II of résumé, with 3 figures, of results of German Babylonian Expedition, 1899. See *American Anthropologist*, 1903, N. S., V, 367.
- Fenner (K.)** Mulla Ali Mahdibajew über die Krankheiten der Kirgisen. (Globus, Brnschw., 1903, LXXXIII, 160-161.) Extracts from notes of a Kirgis scholar, Mulla Ali Mahdibajew, of Tchikment, published in the *Turkestanstija wedomosti* (1902), information concerning lung diseases, coughs, nervous affections, liver troubles, rheumatism, colic, etc., and their folk-treatment among the Kirgis of Russian Turkestan.
- Five Breaths (The).** (Amer. Antiq., Chicago, 1903, XXV, 183-185.) Summary of an article in the *Jour. Amer. Orient. Soc.*, 1901, XXII, with additions by the editor.
- Furness (W. H.)** The ethnography of the Nagas of eastern Assam. (J. An-

- thr. Inst., London, 1902, XXXII, 445-466.) Details, with 2 plates and 1 figure, the results of personal observation of the Naga tribes of the hill country of eastern Assam. Tribal divisions, *khels*, (wards of villages), *jhats* (family ancestral groups), villages and domestic life, *morang* (bachelor's house), clothing and ornament, tattooing, religious ideas, sacred stones, creation legends, sacrifice and propitiation, feasts, burial, spirit-lore, omens, auguries, fortune-telling, oaths, fear of tiger, taboo, making new fire, etc., are considered. Most of the tribes (men, women, and children) smoke tobacco, except the Angamis, who drink rice-beer.
- Ghosu-El Howie (Mrs)** Rock sculpture "in the West-land." (Rec. of Past, Washington, 1903, II, 140-144.) Brief descriptions, with 3 figures, of two rock sculptures on the border of Coele-Syria, —a bull and a female warrior are the subjects, representing perhaps "Canaanish deities."
- Goldziher (I.)** Der Seelenvogel im islamischen Volksglauben. (Globus, Brnschw., 1903, LXXXIII, 301-304.) Well-documented study of the "soul-bird" in the folklore of Islam. Among the items are: Green birds (souls of those slain in battle), little sparrows of Paradise (infants), doves (martyrs), flight of "soul-bird," plurality of soul-birds, birds as incarnation of supermundane powers, birds as messengers of fate and of God, birds as guardians of family-honor, heralds of victory, etc.
- Hogarth (D. G.)** Note on Major Sykes's "Anthropological notes on southern Persia." (J. Anthr. Inst., Lond., 1902, XXXII, 349.) Disagrees with Major Sykes's view that Bahrein taught Chaldea the arts of life. Also protests against strata-chronology at Susa.
- Huntington (E.)** The Hittite ruins of Hilar, Asia Minor. (Rec. of Past, Washington, 1903, II, 131-140.) Brief account, with 16 figures and illustrations, of the ruins of Hilar (between Harput and Diarbekir), a city situated "close to the angle where three great empires (Assyrian, Hittite, Khaldic) of antiquity met," and from which led off three chief roads. The ruins include burial caves and chambers in the rocks, cisterns, panels, carvings, etc.
- Laws (The)** of Hammurabi, King of Babylonia. (Ibid., 67-96.) Gives, with 6 plates and editorial introduction, the English translation (introduction, text of 282 items, conclusion) of the laws of Hammurabi (2250 B. C.), King of Babylonia, who claims to have received them from the sun-god of Sippara. There are striking resemblances between the Code of Hammurabi and the Code of Moses, and the editor observes, concerning the former, "the jurist of to-day will recognize in it most of the fundamental principles on which our social legislation is based."
- Martin (W. A. P.)** Ancient Hankow. (Ibid., 151-152.) Brief notes, with 2 illustrations, on ancient features of Hankow—the gate tower at Wuchang and another pagoda on the way to the Buddhist monastery. Hankow dates back 4,300 years.
- Oppert (G.)** Ueber Einen der Begräbnisplätze der Asche Buddhas. (Globus, Brnschw., 1903, LXXXIII, 225-226.) Résumés with 5 figures, recent literature concerning the discovery in 1898 by Peppé of a sarcophagus, urns and other objects,—one of the urns has an inscription,—in the Sakya Stupa, south of Birdpurgut, which Rhys Davids has recognized as genuine relics of Buddha.
- Peters (J. P.)** Exploration of Nippur. (Ibid., 35-46.) Résumés, with 10 illustrations and a portrait of Dr Peters, the University of Pennsylvania's explorations of ancient Nippur, 1889-1900, the chief results of which are set forth in detail in the author's *Nippur* (N. Y., 1897).
- Prähistorisches** aus Persien. (Globus, Brnschw., 1903, LXXXIII, 304-305.) Brief résumé of De Morgan's investigations.
- Regnault (J.)** Magie et occultisme à l'Extrême-Orient. (Rev. Sci., Paris, 1903, 4^e s., XIX, 560-562.) Treats of the *ma-qui* or "phantoms" of Annamite belief, the *kodi* of the Chinese. These spirits are inimical to children, and cause many diseases. "Witch dolls" and philtres are also described.
- Ruge (S.)** Kleinasien als Wiege der wissenschaftlichen Erdkunde. (Globus, Brnschw., 1903, LXXXIII, 165-169, 186-191.) Historico-critical argument (with appreciations of ancient geog-

raphers) that the primitive men of science of Asia Minor began the science of geography and their successors carried it on through all its phases. Its cradle was in Asia Minor, which really "lies between Europe and Asia." From the tablets of the ancient royal library of Nippur, the author concludes that in the time of Hammurabi, 2,300 B. C., the spherical form of the earth was known to the Babylonians.

Rütimeyer (L.) *Die Nilgalaweddas von Ceylon.* (Ibid., 201-207, 220-223, 261-267.) Gives, with 17 figures, the results of a visit to the Veddas of the Nilgala district, with references to the data in Schmidt, Sarasin, etc. The "clans" treated (physical characteristics, domestic life, disease, houses, clothing, food, weapons, implements, dances, — particularly "arrow dance," metaphysical and religious ideas, social position with other tribes, place among the races of man) are the Danigala, Kolonggala, Hennebedda. The differences between the "clans" (e. g., the position of the woman during childbirth notably different with the Danigala from what it is with the Hennebedda) are recorded. The Veddas are recognized as high caste by the Singalese, although both the latter and the Tamils affect to despise them. Dr Rütimeyer rejects the "degeneration" theory of the origin of Veddas, who for more than 2000 years have been practically as they now are.

Stenz (G. M.) *General Tschan-t'chien, ein chinesischer Forschungsreisender des zweiten Jahrhunderts.* (Ibid., 293-294.) Brief account of Shan-shien, a Chinese general, who, on an embassy from the Emperor Wu-ti (141-86 B. C.), traveled to the Yio-chi on the Oxus. He returned with a wonderful story of the civilization of the Bactrian-Greek cities, and the commercial intercourse thus stimulated was of much benefit to China.

Sykes (P. M.) *Anthropological notes on southern Persia.* (J. Anthr. Inst., Lond., 1902, XXXII, 339-349.) Treats, with one figure, of bronze objects from Khinámán, near Kermán, the Brahui and Baluchi and the Persian Gypsies (known by various names). On pages 345-349 is given a Gypsy vocabulary—Persian text, transliteration, and English words. These Gypsies, whose language is called Gurbati, number some 100,000 in all

Persia. Major Sykes thinks that the Bahrein region was the seat of an ancient Phœnician civilization.

Thurston (E. T.) *Some marriage customs in southern India.* (Madras Gov. Mus., Bull., 1903, IV, 129-179.) Valuable detailed résumé of information concerning marriage forms and ceremonies in southern India. Treats, with two plates, of Bráhma marriages, marriages among the Khonds, Sauras, Badagas, tribes of Vizagapatam, Ganjam, Malabar, Arcot, Coorg, Nairs, Telugu, Canarese, Kallans, Goundans, Lambádís, Kotas, Kurumbas, Todas, Malas, Komatis, Uralís, Rájputs, Kuravans, Tottiyans, etc. All stages of the development of marriage seem represented here, including mock-marriages, substitutional child-marriages, etc. The essential and binding parts of the ceremony differ much.

— *Deformity and mutilation.* (Ibid., 180-201.) Treats, with one plate, of nostril and ear piercing and dilatation, tattooing, teeth chipping and filing, circumcision, cutting off fingers, castration, branding, etc., among the various peoples of southern India.

— *Uralís, Shólagas and Irulas.* (Ibid., 202-213.) Gives, with three plates (types), ethnographic notes, with some anthropometric data (height, form of nose), on the U'ralís of the jungles of Dimbhun in the Coimbatore district; the more primitive Shólagas of the Mi-pore frontier; and the Irulas of Chingleput, fifty miles from Madras. All these tribes are of uniformly short stature (1.59 m.) but differ in nasal index. Emergence from the jungle and "civilization" seem to reduce platyrrhiny.

— *Fire-walking in Ganjám.* (Ibid., 214-216.) Records an account by Magistrate Partridge of a fire-walk on the night of October 6, 1902, at Nuva-góde, by a priest of the village goddess in connection with the Dassera festival. Native feet are not very ticklish.

— *Some forms of corporal punishment in vernacular schools.* (Ibid., 217-222.) Brief description of forty-two varieties of punishment, from notes supplied by native correspondents in southern India. Many of these evince human ingenuity in the way of torture. Nevertheless there is a Tamil proverb that

"the schoolmaster will attain the abode of Vishnu (bliss), and the doctor will go to hell."

Wake (C. S.) The Kauravas of the Hindu Puranas. (Amer. Antiq., Chicago, 1903, xxv, 175-177.) Discusses the claim of the modern Kaurs or Kauravas of Chota Nagpur to be the Kauravas mentioned in the Puranas.

INDONESIA, AUSTRALASIA, POLYNESIA

Alsberg (M.) Ueber die ältesten Spuren des Menschen in Australien. (Cbl. d. d. Ges. f. Anthr., München, 1902, xxxiii, 162-163.) Brief description of a sandstone block found in 1898 at a depth of 54 feet in a quarry near Warmambool, Victoria, containing the impress of the buttocks of two persons sitting together, the footsteps, also tracks of the emu, the dingo, etc. These could have been made only when the stone was in the form of soft sea-sand. If genuine these remains are the oldest human relics in Australia and go back perhaps to pliocene times.

Born (Hr.) Einige Bemerkungen über Musik, Dichtkunst und Tanz der Yapleute. (Z. f. Ethnol., Berlin, 1903, xxxv, 134-142.) Treats, with 2 figures, of music, song, dance, etc., among the natives of Yap in the Caroline archipelago. Their instrument is a bamboo flute. In the dance-song everything in life finds expression. Poetry has a material value and is bought and sold. There are also beautiful prose tales (that of the dolphin is given in translation on page 137). The poetic language differs much from ordinary speech. The sexes dance apart. Dance rehearsals last months, the inventor and poet leading. The medicine-man brings his art to aid. Dances are of two sorts—obscene and not obscene,—of the former, the *kuthiol* of the women is more obscene than any of the men's dances.

v. Bülow (W.) Der vulkanische Ausbruch auf der Insel Savaii, Deutsch-Samoa. (Globus, Brnschw., 1903, lxxxiii, 108-109.) Contains a few notes on the action of the natives towards earthquakes and volcanic eruptions.

Doherty (D. J.) The Tagalog language. (Educ. Rev., N. Y., 1902, xxiv, 497-502.) General sketch (apparently after

Miles) with brief bibliography. The author considers the Filipinos as a race superior to the Chinese.

Dores (R.) Apontamentos para um dicionario chorographico de Timor. (Bol. Soc. de Geogr. de Lisboa, 1903, 763-826.) Valuable list (with historical notes, etc.) of place-names in the island of Timor.

Duckworth (W. L. H.) and Taylor (A. E.) The craniology of the natives of Rotuma. (J. Anthr. Inst., Lond., 1902, xxxii, 432-444.) Treats, with 2 plates, 4 figures, 4 tables of measurements and detailed descriptions, of 9 crania from the island of Rotuma, obtained by Mr J. S. Gardiner in 1897,—all male except two. Of these skulls 6 are assigned to the typical western Polynesian type, one is typically Melanesian and two mixed, these facts reflecting the situation of the island. One skull is thought to show "Mongoloid" features.

Giglioli (E. H.) Testa monumentale singolarissima da Rononga, Isole Salomone. (A. p. l'Antr., Firenze, 1903, xxxiii, 81-84.) Describes, with 2 figures, a *batu*, or memorially preserved and "built up" head from Rononga in the central Solomon group, now in the author's collection. These *batu* are rare—Giglio knew only four (one at Sydney, two at Oxford, one in an English private collection) beside his own.

Haggard (A. H.) The Fijian fire-walk. (Folk-Lore, Lond., 1902, xiv, 87-89.) Brief account of fire-walk as witnessed August 23, 1902, at Suva, Vita Levu.

Hey (N.) and Roth (W. E.) An elementary grammar of the Nggerikudi language. (N. Queensl. Ethnogr. Bull. No. 6, Brisbane, April, 1903, 1-23.) A valuable section of this useful sketch of the Nggerikudi tongue of the Queensland coast is the lists of nouns, with their various meanings, etymologies, etc., which are psychologically important, things in general, parts of body, body as a whole, objective and subjective sensations, family relationships, animals and plants, inanimate nature, manufactured articles, etc. On page 23 are given texts of three aboriginal songs. Some of the transferred meanings are very interesting, *c. g.*, *adax*, "labor pains," originally "a young plant lifting the ground before its

appearance." On page 8 is a list of 43 species of mollusca "all put to economic uses," and on page 9 another of 49 economically used plants. Lightning is called "semen-emission."

Holmes (J.) Initiation ceremonies of natives of the Papuan gulf. (J. Anthr. Inst., Lond., 1902, XXXII, 418-425.) Rather detailed account, with one plate (bullroarer, rain-gods, dance-belts, Oro-kolo men) of customs and ceremonies associated with initiation among the tribes of the Elema district of New Guinea. The boy, who from birth to ten years is *siare*, becomes at ten *siare sora* till he enters the *eraro* (men's house) for seclusion and initiation; he is then a *heava* (the boys altogether being *malai-asu*) and undergoes many taboos. The next stage is *heapu*, which has certain severe tests with less seclusion (a curious use of urine is noted). The last stage is *semese*, in which the mysteries of the "bull-roarer" are divulged, which are to be kept from the women. Sorcery also figures in these ceremonies. Feasts accompany each stage.

— Notes on the religious ideas of the Elema tribe of the Papuan gulf. (Ibid., 426-431.) Treats of reverence for certain objects (any animal of this sort is called *ualare* for the individual), feasts, spirit-lore and future life, dreams, gods as distinguished from spirits, the "supreme god," *Harisu*, the creator, *Ualare*, evil deities, etc.

Loria (L.) Il matrimonia nei villaggi del basso San Giuseppe, Nuova Guinea Britannica. (A. p. l'Antr., Firenze, 1903, XXXIII, 85-96.) Describes in detail, with 2 plates, the forms of marriage in vogue in Innawi, a village of British New Guinea,—the chief are "marriage by purchase" (the most honorable and ambitious) and by flight; the second is called *amange pa inaoga*, "stolen wedding," the first, *pa angawa*. For a double marriage of brothers and sisters from two families a special term, *ngami onge avaya*, is employed. Marriage by flight is not marriage by rapt, for the consent of the bride is given. Marriage by rapt of widows, is, however, practised. Children are sometimes promised in marriage by their parents. Adultery and divorce are also noticed.

Myers (C. S.) The visual acuity of the natives of Sarawak. (J. of Physiol., Lond., 1902, XXVIII.) The measurements of 32 individuals give about 1½ times "normal" acuity. Taking all things into consideration, it is probable that the black race (Rivers' Torres Straits natives gave 3 times normal) exceeds the yellow and white in visual acuity.

Raap (H.) Reisen auf der Insel Nias bei Sumatra. (Globus, Brunschwig., 1903, LXXXIII, 149-154, 171-178.) Describes, with 27 figures, visits to North and South Nias in 1897. Ancestral and other idols, musical instruments, weapons and armor, ornaments, villages, government, slave-trade, burial, commerce, etc., are treated. Head-hunting, a custom dying out in North Nias, flourishes in South Nias. The fresh head of a South Nias native was obtained by the author and is now in the Museum in Braunschweig. The art-sense of the Niasians is expressed in the ornamentation, etc., of their weapons.

Sarasin (P. v. F.) Ueber die Toála von Süd-Celebes. (Ibid., 277-281.) Describes, with 3 figures, the Toála of the mountainous region of South Celebes, a small statured, primitive race of men (av. height 1575 mm., Veddas 1576), with wavy hair, darker-skinned than the Buginese, from whom they differ entirely. Their religious and cosmogonical ideas are cited. The Toála, who were formerly cave-dwellers, are the true autochthones of Celebes, and the discoveries of the brothers Sarasin are of great anthropological importance. They tend to confirm Kollmann's theory of the former wide-extension of small-statured races of man. Some of the stone arrowheads of the Toála are very small and fine.

Seligmann (C. G.) A note on albinism, with special reference to its racial characteristics among Melanesians and Polynesians. (Lancet, Lond., 1902, CLXIII, 803-805.) Treats, with illustrations, the occurrence of partial albinism (rare among Melanesians) and leucoderma (common in New Guinea, Torres Sts, etc.) Albinism seems to occur in certain families or family-groups; in Yam was found a family in which it occurred in 3 generations. The physical and physiological accompaniments of albinism are noted.

— The medicine, surgery and midwifery of the Sinangolo. (J. Anthr. Inst.,

Lond., 1902, xxxii, 297-304.) Treats, with one plate (tattooing and childbirth) and one figure (tattooing) of medical ideas concerning malaria, dysentery, leucoderma, ringworm (recently introduced), arthritis, rheumatism, yaws, urethritis and their treatment; surgery in connection with burns, fractures, hemorrhage, snake-bite; conception and pregnancy, childbirth, abortion, menstruation (the legend attributing menses to the moon is given), etc. Taboos during pregnancy are noted. Many things are attributed to sorcery. Tattooing is much used in medicine. Invalids are never isolated. There are no midwives. Difficult labors are uncommon and abnormal presentations rare. The Sinangolo are an inland tribe of the Rigo district of British New Guinea.

Siedel (H.) Die deutschen Salomo-Inseln sonst und jetzt. (Ibid., 181-186.) Geographical-historical sketch with map of the German islands of the Solomon group, with some notes (pages 185-186) on the natives and their contact with Europeans.

AMERICA

Andree (R.) Asiatisch-amerikanische Folk-Lore Beziehungen an der Beringsstrasse. (Globus, Brnsschw., 1903, LXXXIII, 245-246.) Brief résumé of the article of Bogoras in the *American Anthropologist*, 1902, N. S., IV, 577-683.

Archæological relics from the land of the totem. (Amer. Antiq., Chicago, 1903, xxv, 149-150.) Notes, with figures, on carvings, masks, etc., from Alaska, and on the potlatch.

Beaucamp (W. M.) The Iroquois book of rites. (Science, N. Y., 1903, N. S., xvii, 189-190.) The author has come into possession of the La Fort Ms. used by Hale, Onondaga version, and another Ms. containing the Mohawk text of the greater condoling songs, written by Chief Key.

Boyle (D.) Indian society of false-faces. (The Papoose, N. Y., 1903, I, No. 7, 1-10.) Reprinted, with illustrations, from the *Ontario Archaeological Report*.

Chervin (A.) Crânes, pointes de flèche en silex et instruments de pêche provenant de la baie d'Antofagasta. Momies des hauts plateaux de la Bolivie. (Bull. Soc. d'Anthr. de Paris, 1902, v^e s., III, 700-708.) Describes four skulls

(three male, one female, one child) found by M. Sénéchal de la Grange on the shores of Antofagasta bay, Bolivia, and presented to the society by him, also another skull said to be that of the famous Atahualpa, last of the great Incas; some fine arrowpoints from the graves, a number of wooden harpoons with flint points on bone hooks, a few mirror frames, etc. More important than the last are two mummies (male, female), with which were found several flint tools,—the woman was a miner. The five skulls are reproduced on page 706. All are brachycephalic. It is interesting to learn that in the mines of Huanchaca labor 7,000 Indians, whom M. Sénéchal de la Grange is about to study.

Dixon (R. B.) System and sequence in Maidu mythology. (J. Amer. Folk-Lore, Boston, 1903, xvi, 32-36.) Notes the existence in the mythic history of the northeastern Maidu of California "so clear and definite a sequence of events that one is tempted to regard the whole as a unit and to see in it an epic of no little power." The cycle of the northwestern Maidu has also a notable system and sequence. Each cycle possesses a certain literary charm and power, but the cycles themselves would seem, at least in their latter portions, to follow one another." Dr Dixon's brief study is a desirable addition to the literary criticism of American Indian mythology.

DuBois (C. G.) Manzanita basketry, a revival. (The Papoose, N. Y., 1903, I, No. 7, 21-27.) Brief account, with two full-page illustrations and 6 figures, of the revival of the art of basketry among the Diegueño Indians of Manzanita, California, stimulated by the eastern demand for its products.

Eels (M.) The decrease of the Indians. (Amer. Antiq., Chicago, 1903, xxv, 145-149.) Author concludes that "the Indians on or near Puget Sound have decreased immensely within 40 or 50 years." Reasons for this are: The vices of civilization (drink, licentiousness, diseases), half-civilization (clothing, housekeeping changed).

Eskimomusik. (Globus, Brnsschw., 1903, LXXXIII, 138-139.) Reproduces, with author's account, text and music of 4 songs from the section on "Eskimo Music" of Dr Robert Stein's *The White World* (N. Y., 1902).

- Fletcher** (Alice C.) Pawnee star-lore. (J. Amer. Folk-Lore, Boston, 1903, xvi, 10-15.) Treats of the ideas of the heavens (male, female powers), "father Tirawa"; star-craziness, morning-star and its ceremonies, and sacrifices; the seven winds and their names, Ursa Major and other star-figures. The religious lore of the Pawnees is among the most interesting matter hitherto obtained from the American aborigines.
- Förstemann** (E.) Zwei Mayahieroglyphen. (Globus, Brnschw., 1903, LXXXIII, 95-98.) Discusses, with 8 figures, two Maya hieroglyphs, one of which has been considered hitherto to represent the "death bird," the other the mythic bird, *moan* (it resembles the day sign *cib*). The author argues for the identity of the two glyphs, as they occur in the Dresden codex.
- Zusammenhang zweier Inschriften von Palenque. (Ibid., 281-284.) Discusses the relation between the inscriptions of the two temples of the cross (I and II) at Palenque. Both, Förstemann thinks, date from the year 1498 A. D., one fourteen days before the other.
- Golder** (F. A.) Tales from Kodiak island. (J. Amer. Folk-Lore, Boston, 1903, xvi, 16-31.) English text of five tales from the natives of Kodiak Island, Alaska: The raven and his grandmother, the two inquisitive men, the girl who married a star, the girl who went in search of her lover, the girl who married the moon.
- Harrington** (M. R.) Shinnecock notes. (Ibid., 37-39.) Based on a visit to Shinnecock Reserve, Long Island, in the spring of 1902. Brief descriptions of physical characteristics (negro admixture, wigwams, wooden mortars, basketry, woodenware, language (extinct since fifty years)).
- Hill-Tout** (C.) Kitchen middens on the Lower Fraser. (Amer. Antiq., Chicago, 1903, xxv, 180-182.) Extracted from the *Report on the Ethnological Survey of Canada*.
- Koch** (T.) Der Paradiesgarten als Schnitzmotiv der Payaguá-Indianer. (Globus, Brnschw., 1903, LXXXIII, 117-124.) Treats, with 11 figures, the motif of the Garden of Eden on the carved medicine-pipes of the Payaguá Indians — 8 belonging to various museums and coming from diverse tribes of the Chaco.
- Die Guaikurú-Gruppe. (Mitt. d. Anthr. Ges. in Wien, 1903, XXXIII, 1-128.) This valuable and elaborate monograph treats, with 2 maps, of the nomenclature of the Indian tribes, Guaycurú, Mbayá, Cadiuéo, Kinikinao, Toba, Pilagá, Aguilot, Mocobi, Abipone, Payaguá, Lengua, Guachi, their past and present condition, etc. Pages 41-85 contain Abipone, Guachi, Cadiuéo, Kinikinao, Lengua, Mbayá, Mocobi, Payaguá and Toba vocabularies. Other topics considered are pronominal prefixes, phonetic interchanges, suffixes, numerals (list and detailed etymological discussion of 1-5, etc., pages 112-125). Pages 1-2 contain bibliography.
- Lawson** (P. V.) Summary of the archeology of Winnebago county, Wisconsin. (Wisc. Archeol., Milwaukee, 1903, II, 40-85.) Valuable summary (in all sixty-two locations) of information concerning the Indian mounds, village sites, cemeteries, shell-heaps, fortifications, embankments, "corn-hills," "kitchen-holes," in the various towns of the county, with map and seven figures. The author estimates the number of aboriginal artifacts (clay, stone, copper, iron, shell, bone) obtained from the Indian village sites, mounds, cemeteries, etc., of Winnebago county, at 60,000. In historic times this region has been occupied by the Winnebago, Fox and Menominee Indians. Here the Iroquois of New York, as allies of the French, fought the Foxes.
- Lumholtz** (C.) Explorations in Mexico. (Geogr. J., Lond., 1903, repr. 1-17.) Résumés, with map, the results of author's researches in northern Mexico 1890-1898. Contains notes on the Tarahumare and Huichols. The details are given in Dr Lumholtz's *Unknown Mexico* (N. Y., 1902).
- Mead** (C. W.) The musical instruments of the Incas. (Amer. Mus. J. Suppl., N. Y., 1903, III, No. 4, 1-31.) Treats, with four plates and four figures, of the drum, bell, rattle and cymbal, syrinx (pan-pipe), flute, resonator whistle, trumpet, double whistling jar, cornet. The pan-pipes are used in the *chuño* (potato festival) and "church performances" of the Aymaras, as in old

- Peru. The old drum still survives in many parts of the country. *Spondylus* shells were used as "cymbals." Flutes are discussed with some detail. The shell and the terra-cotta trumpet were known. The *tinya* (a sort of guitar) is post-Columbian; there is no evidence of aboriginal stringed instruments in ancient Peru. The Peruvian scale is rather uncertain.
- Merriam** (C. H.) Some little-known basket materials. (Science, N. Y., 1903, N. S., XVII, 826.) Identifies two materials extensively used by certain Indian tribes of California—*Cladium mariscus*, and the unpeeled root of the tree yucca (*Yucca arborescens*). The materials used in combination with these are briefly noted. By selection of the varying yucca root "some of the Indian women produce beautiful shaded effects and definite pattern contrasts." The Panamint Shoshones vary the color of the *Scirpus* root by burying it in wet ashes. Reprinted in *The Papoose* (N. Y.), 1903, I, 14-16.
- Mochi** (A.) I popoli dell' Uaupé e la famiglia etnica Miranã. (A. p. l'Antr., Firenze, 1903, XXXIII, 97-130.) This second section, with two figures, treats of social organization (the ethnic unit is the "people"), the "clan" does not exist; if any, the vague name of "group" must be used; chiefs (local) and their insignia; primitive aristocracy; government (oligarchical rather than monarchical); crime and punishment (secret poisoning for private ends is not rare; marriage (largely monogamous and more often exogamous, but with no formal prescription; marriage by rapt also survives; a "test-period" of about a year precedes real marriage, which is indissoluble); the *couvade* (here present in marked form); "invocation" of demons at baptizing of children; infanticide; puberty and its treatment, etc.
- Monumentos** (Los) arqueologicos de Cantona. (Sem. Lit. Illustr., Mexico, 1903, III, 248-259.) Brief account, with 9 illustrations, of pyramids of Cantona on the hacienda of Xaltipanapa in Tepeyahualco, State of Puebla, Mexico.
- New Yorker** (Die) Juden. (Globus, Brnschw., 1903, LXXXIII, 219, 220.) Résumés the various articles of Dr M. Fishberg. See *American Anthropologist* (N. S.), vol. IV, No. 4; vol. V, No. 1.
- Peet** (S. D.) Ruined cities in Peru. (Amer. Antiq., Chicago, 1903, XXV, 151-174.) General discussion with illustrations.
- Pittier de Fabrega** (H.) Folk-lore of the Bribri and Brunka Indians in Costa Rica. (J. Amer. Folk-lore, Boston, 1903, XVI, 1-9.) English text of 7 tales: How Jaburu ate the seed of our kin, How the first Bribri Indians were born, The tale of our dying away, How Sibú killed Sôrkura, The king of the Tapirs, The king of the wild hogs, Don Pedro Cascante (modern devil story). The first five tales are Bribri, the others Brunka.
- Prehistoric hematite quarry, discovery of a.** (Rec. of Past, Washington, 1903, II, 154.) Brief note with two illustrations, on the ancient hematite quarry discovered in April, 1903, near Leslie, Mo. (See the article by W. H. Holmes in this issue of the *Anthropologist*.)
- Preuss** (K. T.) Die Sünde in der mexikanischen Religion. (Globus, Brnschw., 1903, LXXXIII, 253-257, 268-273.) Discusses, with 5 figures, the ancient Mexican ideas of sin and punishment, their symbolical representation, etc. Sacrilege and offenses against the state were punished by the gods—leprosy, sexual diseases, gout, skin diseases, dropsy, were sent by Tezcatlipoca. Fornication was reckoned a sin. Slaves were regarded as sinners—all misfortunes were attributed to sin or to the sinful nature of man. The realms of the dead and the "sinning gods" are also treated, together with the symbolism of pulque in connection with the sin of drunkenness.
- Progress toward an international commission of archaeology and ethnology.** (Science, N. Y., 1903, N. S., XVII, 715-716.) Brief outline of plan. Final organization to be made in December.
- Reich** (A.) u. Stegelmann (F.) Bei den Indianern des Urubamba und des Envira. (Globus, Brnschw., 1903, LXXXIII, 133-137.) Treats, with 6 figures, of the Kampa and Kunibo of whom Reich gives a brief ethnographical sketch, with short Kampa, Piro and Kunibo vocabularies; and of the Tauaré of the Rio Envira—general account by Stempelmann, with Kashináua and Jamináua vocabularies. A brief introductory note is by Dr K. von den Steinen.

Schmidt (M.) Praktische Versuche über das Feuerbohren nach indianischer Weise. (*Z. f. Ethnol.*, 1903, XXXV, 75-80.) Describes, with 4 figures, six attempts to make fire after the manner of various American Indian tribes.

Seler (E.) Die Korrekturen der Jahreslänge und der Länge der Venusperiode in den mexikanischen Bilderschriften. (*Ibid.*, 27-49.) Treats, with 15 figures, of the correction of the year's length and of the length of the Venus-period in the old Mexican MSS., the *Codex Nuttall* in particular. Seler concludes that the MSS. show that "82 Mexican years of 365 days are really 20 days less 3 hours, 18 minutes, 59.1608 seconds shorter than 82 real years" — hence an intercalation of twenty days after 82 years would about set matters right. This period of 82 years has no relation to the Venus-period. The correction of the Venus-period was made by subtracting a Mexican year minus four days every 88 years. Seler considers that the astronomical data in the *Codex Nuttall* bring the creators of the culture represented by it up to the Maya peoples and point to a community of culture.

— Las excavaciones en Mexico. (*Ann. Mus. Nac. de Mex.*, 1902, VI, 235-260.) Translated from *Mitt. d. Anthr. Ges. in Wien*.

Sievers (W.) Zur Schreibweise der Orts- und Stammesnamen in Südamerika. (*Globus*, Brnshwg., 1903, LXXXIII, 170-171.) Discusses briefly the vagaries of spelling in place and ethnic names in South America. Protests against "innovations," such as the change from the plural to the singular form (Uapés, Uapé), the substitution of *k* for *c* in well-known and long-used names, of *tsh* for *ch*, *k* for *gn*, etc.

Speck (F. G.) Mohegan traditions of *mukkeahweesug*, "the little men." (*The Papoose*, N. Y., 1903, I, No. 7, 11-14.) Résumés the traditions of the Mohegans of Connecticut, as related by one of their number at the present time, concerning the "little men," who preceded them in this part of the country. The author inclines to believe with these Indians that "the east central part of Connecticut has seen, within the last three hundred years, the passing away of

a race that may have been somewhat akin to the Mound-builders."

Starr (F.) The sacral spot in Maya Indians. (*Science*, N. Y., 1903, N. S., XVII, 432.) Records, with figures, seven cases (boys 5, girls 2), aged from two months to a year — all of pure Indian blood — in the town of Palenque. Occurrence is more evanescent in Mayas than in Japanese; rarely present beyond ten months. Of three Mestizo babes of less than ten months none showed spot.

von den Steinen (K.) Ueber den XIII. Internationalen Amerikanisten-Kongress in New-York und die ethnographischen Museen im Osten der Vereinigten Staaten. (*Z. f. Ethnol.*, Berlin, 1903, XXXV, 80-92.) Excellent résumé of the proceedings of the International Congress of Americanists, with personal impressions, notes on the museums visited, etc.

Weygold (F.) Das indianische Lederzelt im Königlichen Museum für Völkerkunde zu Berlin. (*Globus*, Brnshwg., 1903, LXXXIII, 1-7.) Describes, with colored plate and two figures, a "medicine tent" of the Sioux (?) Indians in the Berlin Ethnological Museum since 1846. Of the one hundred figures painted on the leather the central one is the great sacred pipe. Snakes, birds, horses, buffalos, human beings, and other objects are also represented.

Winchell (N. H.) The pleistocene geology of the Concannon farm, near Lansing, Kansas. (*Amer. Geol.*, Minneapolis, 1903, XXXI, 263-308.) Treats, with four plates and three figures, of the geological character and relations of the region where was discovered the "Lansing man." The author concludes that "the date of burial is to be determined by the length of time elapsed since the spreading of the Iowan loess, which, compared with the age of the Kansan drift seen scantily spread on the highlands, was an event much nearer the end than the commencement of the glacial period."

Wrenshall (Letitia H.) Incantations and popular healing in Maryland and Pennsylvania. (*J. Amer. Folk-Lore*, Boston, 1902, XV, 268-274.) Treats of "powwow" and "trying for it," folk-cures, charms, witches, spells, mental priestess, devil child, etc.

ANTHROPOLOGIC MISCELLANEA

Cave-deposits in the Ozark Mountains. — Under the auspices of the new Department of Archæology at Phillips Academy, Andover, Massachusetts, Dr Charles Peabody, the Honorary Director, and Mr W. K. Moorehead, the Curator, undertook, in May last, the exploration of a rock-shelter in the foot-hills of the Ozark mountains. Benton county, northwestern Arkansas, and McDonald county, Missouri, adjoining on the north, contain many caves and rock-shelters. The one selected for the work is situated about three miles east of Pineville, Missouri, forty feet above the old bed of Little Sugar creek, opening to the southwest, and on the land of Mr J. H. Foster.

The discoverer, Mr E. H. Jacobs, of Bentonville, Arkansas, had already made some examination, and it was through his information that the Academy learned of the place and largely through his coöperation that the work was successfully conducted. The shelter is about twenty meters wide at the opening and fourteen meters deep. The height of the roof above the floor of fallen blocks of limestone varies from two to three meters, but is less toward the rear. The entire cavern was covered with a layer of ashes varying from half a meter to a meter and a half in thickness, which presented a fairly level surface.

At the rear, a short distance from the rock wall, a series of stalagmitic stools had been formed, the corresponding stalactites above being usually much smaller. In one instance, however, stalagmite and stalactite had become connected, largely by means of a secondary stalagmite apparently formed upon the ashes present at the time as a base. The ashes contained a few human burials, a great many animal bones, both complete and split, numerous flint-chips and chipped-flint implements, a very few of the polished ("neolithic") class, and very little pottery. A number of bone implements ("awls") were also found.

The stalagmites as far down as the base of decomposed limestone on which they rested were found to be permeated with the ash and minute pieces of charcoal; they also enclosed, firmly embedded, numerous bones and flint-chips.

The conclusion was reached by the excavators that the stalagmites had obviously been formed after and during man's occupancy of the cavern. The flint-chips alone would establish this, for after close exami-

nation by the visiting geologist, Prof. Charles N. Gould of the University of Oklahoma, no trace of flint was found in the roof whence it could have fallen upon the ash-layer below. Near the entrance, both within and without the cavern, were large stones with a quite brilliant polish, resembling that on the stone walls of the gallery at Tiryns. That this polish was produced by man and not by animals seems to be proved by the fact, observed by Mr Jacobs, that the stones occur only in connection with caverns that contain ashes.

The date of the earliest occupancy of the cavern may never be known. Stalagmitic deposits are no criterion and no traces of stratification were observed. In the course of study of the remains, and of the animal and human bones, further facts may become known; the search for these will be the next duty of the department at Andover.

CHARLES PEABODY.

Crow Indian Hermaphrodites. — It has been stated that there are more hermaphrodites among the Crow Indians than among any other tribe, and that in a certain ceremony similar to the sun-dance an hermaphrodite performed a certain part in the erection of the lodge in which the ceremony took place. In "Corbusier winter counts, 1839-1845,"¹ the following references are made:

"1848-'49. No. I. American Horse's father captured a Crow who was dressed as a woman, but who was found to be an hermaphrodite and was killed."

"No. II. American Horse's father captured a Crow woman and gave her to the young men, who discovered that she was an hermaphrodite and killed her."

During a visit last year to the Crow reservation, in the interest of the Field Columbian Museum, I was informed that there were three hermaphrodites in the Crow tribe, one living at Pryor, one in the Big Horn district, and one in Black Lodge district. These persons are usually spoken of as "she," and as having the largest and best appointed tipis; they are also generally considered to be experts with the needle and the most efficient cooks in the tribe, and they are highly regarded for their many charitable acts.

On one occasion, while making a canvass of the tipis of the Pryor district, I came upon an individual who, I was told, was "half man and half woman." Shortly afterward the person came out dressed in woman's attire, consisting of a loose calico frock fitted in at the waist with a profusely beaded strap, and a pair of moccasins. This person was almost gigantic in stature, but was decidedly effeminate in voice and manner.

¹ Mallery, "Pictographs of the North American Indians," *Fourth Ann. Rep. Bureau of Ethnology*, p. 142.

I was told that, when very young, these persons manifested a decided preference for things pertaining to female duties, yet were compelled by their parents to wear boys' attire; as soon as they passed out of the jurisdiction of their parents, however, they invariably donned women's clothes.

A few years ago an Indian agent endeavored to compel these people, under threat of punishment, to wear men's clothing, but his efforts were unsuccessful.

S. C. SIMMS.

The Musical Bow in Formosa. — Recently, at the Fifth National Industrial Exhibition at Osaka, Japan, I observed, in the Formosa exhibit, three specimens of the musical bow as used by the aboriginal "wild" mountain tribes of this island. All three specimens were very simple, consisting of a single narrow piece of split bamboo and a string. The single string, in two cases, was apparently hemp fiber, very tightly twisted and coated with wax, giving it the appearance of sinew. In the remaining specimen an iron wire was used for the string. The total length of the instrument varied from about 59 to about 76 centimeters. There was nobody present who could play the instruments, but from a water-color sketch which accompanied the specimens exhibited I could see how it was played by the natives. The bow, string upward, is held more or less like our violin; the left hand holds one end while the other rests upon the left shoulder. In this position the lower part of the string is struck with the finger-tips of the right hand, the upper part being brought in vibration by the lips of the player.

The three specimens mentioned belonged to three different mountain tribes, viz., the Tsóo (or Tsou), living in central Formosa; the Vonum, occupying a region north and east of the Tsóo; and the Puyuma, who inhabit a small territory of the southeastern coast. The native names of the musical bow, as given on the labels accompanying the exhibit, are, respectively, *posoru*, *rad yok*, and *ratök*.

Several kinds of mouth harps and a long nose flute, also exhibited, indicate that the tribes mentioned and others use these instruments as well.

H. TEN KATE.

Algonquian Names for Pickerel. — Among the many somewhat remarkable explanations of Algonquian words given in the *Natick Dictionary*, recently published by the Bureau of American Ethnology, is that of the name of the pickerel, which Roger Williams erroneously wrote *qundsu* for *quundseu*. This word Dr Trumbull derives from *gunni*, 'long,' and *-utchan*, 'nose.' Even the learned Abbe Cuoq, in a foot-

note on page 51 of his *Lexique de la Langue Iroquoise*, after explaining that the Iroquois name for the pickerel means 'long snout,' states that "les nations algonquines nomment ce poisson *kinonje*, mot composé qui a le même sens." Such is not the case, however. If we go back to Cree, the most ancient group of Algonquian dialects, we find that *kinóseu* (written also *kinúseu*) is the name generic therein for 'fish.' This word is from the root *kino*, 'long,' and the intransitive verb suffix *-óseu* or *-úseu*, denoting the act of parturition; and the Cree name for fish therefore means, literally, 'it produces elongated offspring.' This suffix (and its cognates: Menomini *-ónsheu*, Narragansett *-óseu*, Abnaki and Pequot *-úse*, Ojibwe *-óje* or *-óje*) never has any other meaning. Thus: Cree *nitdóseu*, = Ojibwe *nitdo"je*, 'she is capable of child-bearing'; Cree *peyakóseu*, = Ojibwe *bejigo"je*, 'she gives birth to one child'; Cree *ndpeóseu*, = Ojibwe *ndbeo"je*, 'she gives birth to a male child'; Cree *kinóseu*, 'she gives birth to long offspring,' = Ojibwe *kino"je*, = Narragansett *kwunóseu*, = Pequot *kwunúse*, = Abnaki *kun-úse*, etc., all names for the pickerel.

Since the pickerel was the fish *par excellence* of the Algonquian Indians, the word for "fish," narrowed down from a general to a specific sense, was applied, in nearly all dialects except Cree, to this particular member of the "finny tribe." By the Prairie Crees it is called *iyini-kinóseu*, 'fish properly so called.'

Something like this obtains in Newfoundland, where more than half of the population of 220,000 is engaged in the cod-fishing industry. Here, when a person speaks of "fish" he is understood to mean the cod, the name for which is not used; and even the courts of the island have legally applied the term "fish" to the cod because of its great importance.

W. R. GERARD.

Cheyenne Songs. — A recent visit to the Tongue River Indian reservation enables me to correct some errors which crept into my "Notes on Some Cheyenne Songs" published in the last issue of the *American Anthropologist*. The first song, entitled "War Song," by Ridgewalking and others (p. 315), was wrongly interpreted. It should read:

<i>Ksô wâh'</i>	<i>é'wô,</i>	<i>is tsî im'</i>	<i>nâ êh' hyâ;</i>	<i>nâ i' shî mâ hâât.</i>
Young man,	she says	(to be your) wife	I am unfit;	I am too old.

Ksû wâh', 'young man'; *his tsî im's'*, 'his wife.'

Translation: Young man, she says, I am not fit to be your wife. I am too old.

In the second "Song of Returning War Party" (p. 319) the personal pronoun *I* has dropped out under the word *nā hō i hyđ tō*, which means 'I follow.'

In the "Fox Soldier Dance Song," by Wild Hog (p. 320), the word *hō wān' i* appears to mean 'he is gone,' rather than 'he is not.'

GEORGE BIRD GRINNELL.

Dr Heinrich Schurtz, whose death occurred May 2d, at the early age of 40 years, was one of the most promising of the younger school of German anthropologists. He was a pupil of Ratzel and the ethnographic section of the Bremen Museum was built up largely through his efforts. He was a contributor to many scientific periodicals and published besides the following important books: *Grundsüge einer Philosophie der Tracht* (Stuttgart, 1891), *Katechismus der Völkerkunde* (Leipzig, 1893), *Grundriss einer Entstehungsgeschichte des Geldes* (Leipzig, 1898), *Das Afrikanische Gewerbe* (Leipzig, 1900), *Urgeschichte der Kultur* (Leipzig, 1900), *Altersklassen und Männerbünde* (Berlin, 1902), the last two being his most ambitious and suggestive works. *Grundriss der Völkerkunde* will appear posthumously. The loss of Dr Schurtz will be felt in all anthropological circles.

A. F. C.

Fences and Cat's-cradles. — Mr Tom Petrie, who came out to Australia in the early days (1840-50) tells me that the Brisbane blacks (now all extinct) used to play cat's-cradle under the name of *warro-warro*, and with the white man's appearance his fences got the same name because of the resemblance of posts and rails to the shape of the string when held in one way across the hands.

W. E. ROTH.

MR WARREN K. MOOREHEAD has in preparation a two-volume work to be published in the winter of 1905 by the Robert Clarke Company, of Cincinnati, under the title *The Stone Age: An Archaeological Encyclopedia of the Implements, Ornaments, etc., of the Prehistoric Tribes of the United States*. Mr Moorehead solicits notes, drawings, and photographs of specimens from collectors for use in connection with the preparation of the volumes.

GUSTAV RADDE, well known for his researches in Siberia and the Caucasus, died at Tiflis, March 16, aged 72 years. He was a biologist and geographer, but will be remembered as an anthropologist by his founding of the Natural Historical, Ethnographical, and Archeological Museum at Tiflis in 1866, and by his works on the Caucasus, particularly *Die Chewsuren und ihr Land*, published in 1878.

GLOBUS, the German geographical and anthropological journal, published at Braunschweig, underwent, with No. 12 of volume LXXXIII (1903), a change of editorship. Dr Richard Andree, who for eleven years has been editor, retires (but continues as contributor) and is succeeded by H. Singer, the geographer, for many years a contributor to *Globus*.

M. MARCELLIN BOULE, one of the editors of *L'Anthropologie*, has been elected president for 1903 of the Société Géologique de France. The same distinguished anthropologist, by a decree of January 23, 1903, was appointed successor to M. Albert Gaudry as professor of paleontology at the Muséum d'Histoire Naturelle, Paris.

DR BERNHARD SALIN, hitherto assistant in the State Historical Museum, has been appointed successor to Dr Arthur Hazelius as director of the Scandinavian Museum, founded by the latter. The new director of the Skansen Museum is Dr Gunnar Hazelius, son of the founder.

DR GEORGE BYRON GORDON has been appointed assistant curator of American archeology and general ethnology in the Free Museum of Science and Art of the University of Pennsylvania. Dr Gordon assumed his new duties September 1st.

DR W J MCGEE has resigned his position as ethnologist-in-charge in the Bureau of American Ethnology and has been appointed chief of the Department of Anthropology of the Louisiana Purchase Exposition at St Louis.

THE THIRTEENTH SESSION of the Congress of the Federation of the Societies of History and Archeology of Belgium, under the patronage of the King, was held at Dinant, Province of Namur, from the ninth to the thirteenth of August.

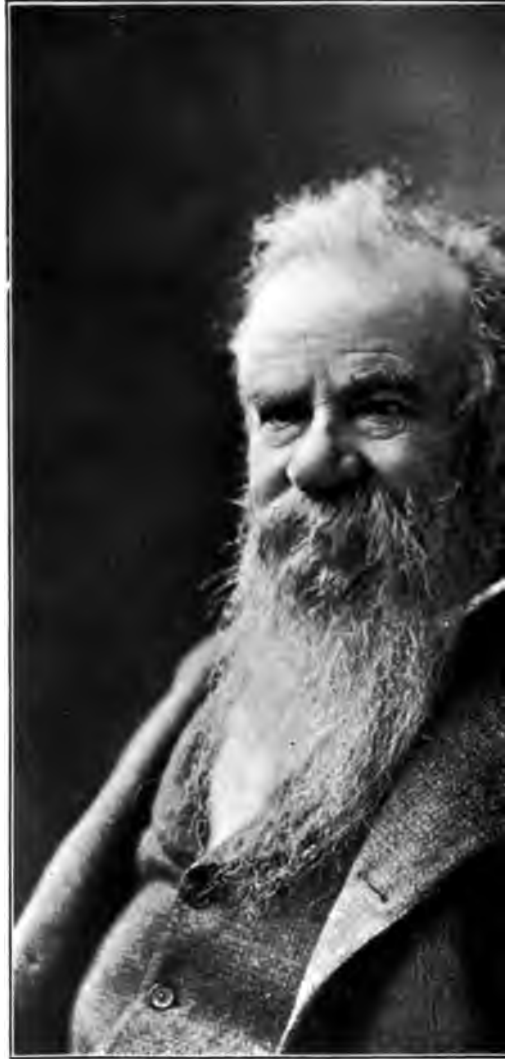
MR ADOLPHE F. BANDELIER, who has spent the last eleven years in archeological and ethnological research in Peru and Bolivia in the interest of the American Museum of Natural History, has returned to New York.

DR FRANK RUSSELL has resigned the instructorship of anthropology at Harvard University, which he has held since 1897. Owing to ill health he will live on a ranch in Arizona.

KARL RITTER VON SCHERZER, one of the participants in the Novara expedition and the editor of its scientific publications, died February 20, 1903, aged eighty-two years.

THE DEGREE of Ph.D. has been conferred on W. C. Farrabee, and that of Sc.D. on George Byron Gordon, of the Department of Anthropology, Harvard University.

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A STUDY OF THE BRAIN OF THE LATE MAJOR J. W. POWELL

By EDWARD ANTHONY SPITZKA

INTRODUCTION

The fortunate preservation of the brain of Major J. W. Powell affords another opportunity for placing on record the cerebral characteristics of a distinguished man. Major Powell will ever be remembered for the vigorous brainy qualities by means of which he exerted a great influence upon his fellow-workers and greatly favored the progress of those branches of science to which he was most devoted. His personality was one which will remain cherished in the memory of all who knew him; the forceful workings of his brain earned him the leading position in the ranks of science-makers, and his clear foresight, his courage, energy, sympathy, and independence of character have met with universal admiration.

Through the kindness of Dr W. J. McGee, Dr Frank Baker, and Dr D. S. Lamb, the writer was permitted to undertake the study of this brain with the view, first, of placing a morphological description of it on record, and further with the view of correlating, if possible, certain of Major Powell's pronounced mental characteristics with the anatomical appearances of the brain. The results of this study were given, in part, before the Anthropological Society of Washington.¹ In presenting a completed account of the researches upon this brain, the writer proposes to review (*a*) briefly the objects and

¹ "Cerebral Characteristics of Distinguished Men, with Special Reference to the Late Major J. W. Powell," read May 12, 1903.

the history of similar examinations of the brains of notable persons, (b) the weight of such brains and certain features of the cerebral surface morphology as compared with those of persons of ordinary intellectual powers, (c) a morphological description of Major Powell's brain, and (d) a discussion of the possible relations which certain features noted in the brain may bear to some of Major Powell's chief mental characteristics.

I

That the brains of men intellectually eminent should come to the hands of anatomists for the purposes of correlating, if possible, the encephalic weight, form, and fissural pattern with the bodily and mental powers is but a sign of scientific progress, and the subject should form no unimportant branch of anthropometrical research. When we remember that in the human species the brain has attained the highest degree of perfection, and experience teaches that the manifestations of brain-action differ considerably in the races and social classes; when we remember that all that has ever been said or written, carved or painted, discovered or invented, has been the aggregate product of multifarious brain-activity, it seems but reasonable to seek for the somatic bases for these powers and their differences in different individuals. Men are as variously endowed with intellectual powers as they are with any other traits. It is our business to endeavor to ascertain why and how some are more, some less, gifted than others; it is not enough merely to admire the genius of an Archimedes or a Homer, a Michelangelo or a Newton; we wish to know how such "men of brains" were capable of these great efforts of the intellect, and what gave them the capacity for doing things, as it were, "without taking pains." "Millions," says Hartmann, "stare at a phenomenon before a *genialer Kopf* pounces on the concept." In a general way, comparative physio-psychology has aided us in the search for the key to this great problem. We know the mind of man to differ most from that of the brute in the unusual development of the associations of receipts and concepts, *i. e.*, the powers of reasoning. But if in the brain of the average man there be a hundred or two hundred or five hundred connections for every fact that he remembers, their number is many times greater in that of the intellectually superior

genius. An elaboration of brain-structure must therefore accompany the higher intelligence, and it is in this direction that our researches must be pursued.

The question as to what means shall be employed brings forth a very great number of difficulties. The structure of the brain is the most complex of all the bodily organs ; its anatomical make-up is only beginning to be understood ; and though the science of brain architecture and action can be said to be only in its infancy, the great array of even the most recently accumulated facts alone can stagger any one. As a subject of study, the brain occupies the most unique position of all the viscera ; investigators must truly " cudgel their own brains " in studying the brains of others, and Greek meets Greek in a veritable tug-of-war. The proposition, then, of attempting to correlate a manifest elaboration of the mental powers with (what we may for the present assume to be) an elaboration of cerebral structure, cannot, in the state of our knowledge at this time, be discussed as a whole, but rather in the form of numerous subdivisions which may in the future be blended in a more comprehensive manner.

Some of the problems which have been receiving the most attention until now are based upon the microscopical study of the unit of the nervous system, the neuron or nerve-cell and axis-cylinder (axone) with the numberless dendrites, and upon the intricate grouping and chaining of these millions of neurons¹ within the central nervous system. Not less important are the studies of the morphological appearances of the cortical surface, the comparative extent of certain cortical areas, upon the weight of the brain and its component parts, as well as in comparison with that of the spinal cord ; of the ratio between the collective cross-section area of the cranial nerves and of the spinal cord ; of the number of fibers in different tracts, be they efferent, afferent, or associative ;¹ on the relative bulk of gray and white matter ; on the progressive myelinization of different nerve-fiber tracts, and so on almost without end. Such studies are of great value in elucidating many of the problems of

¹ A comparative study of the form, dimensions, and number of fibers in the callosum of different animals and of different human individuals would prove most interesting and instructive.

cerebral localization of functions; problems of great importance in the clinical diagnosis of brain-injury, disease, or defect. In their relations to phylogeny, to psychology, education, and the study of the evolution of man in general, they are unquestionably of high value.

It is to Rudolph Wagner,¹ of Göttingen, that we are indebted for having made the beginning in this kind of study. He was so fortunate as to obtain the brains of the physicist and mathematical genius Friedrich Gauss, the pathologist Carl Fuchs, the French mathematician Dirichlet, the philologist Carl Hermann, and the mineralogist Hausmann. In Wagner's time the study of cerebral surface morphology was yet in its infancy. Wagner was therefore not in a position to treat of these brains in a detailed manner, and he could discuss them only in the way of a general comparison. With so little material at hand, Wagner was rather premature in expressing himself satisfied that complexity and richness of convolution were not in relation with greater intellectual capacity. The brain of Gauss—mathematician and astronomer, productively active in the field of dynamic physics, precocious in youth, vigorous in old age—has stood unique as showing the most complex configuration and intricate fissuration, for over forty years—and this amongst thousands upon thousands of brains more or less carefully examined by investigators fully alive to the importance of the subject.

Subsequent to the publication of Wagner's work, similar investigations were taken up in Paris and Munich, and, on this side of the Atlantic, in Ithaca, Philadelphia, and New York. Interest in the subject has been revived in other centers of scientific progress, notably in Stockholm, where Professor Retzius has already published the descriptions of the brains of three distinguished persons.

A brief review of what has been done with the brains of notable individuals may prove interesting. Aside from vague, perhaps even mythical, references to the brains of La Place, Rousseau, von Siebold, Byron, Beethoven, Pascal, Eduard Lasker, and Bismarck, we have complete studies of the brains of five members of the Parisian

¹ Wagner, *Vorstudien*, Göttingen, 1860-62.

Société Mutuelle d'Autopsie : Assezat,¹ Bertillon,² Coudereau,³ Eugen Veron,⁴ and Asseline,⁵ and also that of Gambetta.⁶ Retzius has described those of the astronomer Hugo Gylden,⁷ the mathematician Mme Sonya Kovalewski,⁸ and the physicist and pedagogue Per Adam Siljeström.⁹ Others that have been described in detail are those of the composer-musician Rudolf Lenz,¹⁰ General Skobeleff,¹¹ the anatomist Giacomini,¹² and the historian George Grote.¹³ The writer has been so fortunate as to contribute descriptions of the brains of the two distinguished physicians Seguin, father and son,¹⁴ the first instance on record where it was possible to compare the brains of blood relatives.¹⁵ Partial studies have been made on the brains of Chauncey Wright (philosophical writer)¹⁶ and Edward Oliver¹⁷ (mathematician) by Professor Wilder, of Ithaca ; that of Desider Szilagy (the "Bismarck of Hungary"),¹⁸ Professor Laborde,¹⁹ De Morgan (mathematician),²⁰ Helmholtz (physicist and physiologist),²¹ and the five brains mentioned above in Wagner's series. In Munich, Bischoff and Rudinger²² have made special studies of cer-

¹ Duval et al. in *Bull. Soc. d'Anthropol.*, 1883.

² Chudzinski and Manouvrier, *ibid.*, 1887.

³ Laborde, Duval, et al., *ibid.*, 1883.

⁴ Manouvrier, *ibid.*, 1892.

⁵ Duval, et al., *ibid.*, 1880 and 1883.

⁶ Duval, *ibid.*, 1886.

⁷ Retzius, *Biol. Untersuch.*, 1898-1903.

⁸ *Ibid.*

⁹ *Ibid.*

¹⁰ Guszman, *Anat. Anz.*, XIX, 1901, p. 239.

¹¹ Neiding in *Bull. Soc. d'Anthropol.*, 1882.

¹² Sperino in *Gior. d. R. Accad. di Med. di Torino*, 1900.

¹³ Marshall in *J. Anat. and Physiol.*, XXVII, 1892, p. 30.

¹⁴ Spitzka, E. A., in *Phila. Med. Jour.*, April 6, 1901.

¹⁵ Exclusive of the Seguin brains and that of Major Powell, the writer has since had placed at his disposal the brains of eight other notable men of science, scholars, or public men, among them that of the late Major J. B. Pond. The results of the investigations upon these specimens will probably be published within the year.

¹⁶ B. G. Wilder in *J. Nerv. and Ment. Dis.*, 1896, p. 706.

¹⁷ *Ibid.*

¹⁸ Sugar, *Orvosi Hetilap*, 1902, p. 8.

¹⁹ Papillault in *Mém. Soc. d'Anthropol.*, 1903.

²⁰ Bastian, *Brain as an Organ of Mind*, 1880, p. 392.

²¹ Hansemann in *Ztschr. f. Psych. u. Physiol. d. Sinnesorgane*, 1899, 1.

²² Rüdinger, *Anat. d. Sprachcentrums*, 1882, and *Beitrag z. Anatomie d. Affen-spalle*, 1882.

tain regions of the cerebral surface (namely, the speech-center and the "intraparietal" fissure, together with the parietal regions in general) of the brains of eighteen intellectually eminent persons, as follows:¹ Justus von Liebig, chemist; Tiedemann and Doellinger, anatomists; G. H. E. Bischoff and Pfeufer, physicians; Harther, v. Poezl, and Wülfert, jurists; Melchior Meyr, H. v. Schmidt, Lichtenstein, and Schleich, litterateurs; Buhl, pathologist; Huber, philosopher; Hermann, economist; Harless, physiologist; Fallmerayer, historian; L. Meyer, surgeon, and Lasaulx, philologist. Reference has been made to a number of others, but in most cases the weight of the brain only was recorded and published.

The writer will, in this necessarily brief summary of what has been published concerning the brains of eminent men, confine himself to a consideration of the brain-weight and of the surface morphology of the cerebrum — both generally and with special reference to certain cortical areas. A discussion of the microscopical appearances or of any of the other kinds of cerebral investigation hinted at above must be omitted, since little or nothing has been done in these fields as yet. To be sure, Wagner sought to ascertain the possible relations of the area of the cortex to the degree of the intelligence, and while his results were quite significant, they were based on too few observations, and nothing further has since been accomplished in this direction.

II

The brain-weight of intellectual persons is a subject concerning which there has been much discussion. That the very slow accumulation of brain-weights of distinguished men, or of successful members of the liberal professions, has contributed to the existing diversities of opinion concerning the significance of the weight of the brain in its relations to the intelligence is clear to any one familiar with recent essays on the subject. Particularly disconcerting to some writers has been the not infrequent occurrence of unusually

¹ In this connection it is interesting to note that the skulls of Hamerling (described by Holl in *Arch. f. Anthropologie*, July, 1903), Bach, Kant, and other great men showed pronounced development of the parietal region, a feature actually determinable in the brains of Rudinger's series, and, as will be seen in the sequel, in Powell's brain as well.

heavy brains in idiotic persons, while certain low brain-weights of men ranking high in intelligence have prompted not a few anatomists and anthropologists—not content to defer judgment until a sufficient number of data had been collected—to make the flat assertion that “the weight of the brain is absolutely unrelated to the psychic faculties.” It were indeed strange if we had thus to overthrow the general principles governing the functions of the brain as an apparatus of thought. Aside from the well-established proofs of the interdependence of brain-weight and intelligence in the animal series, there exist the very convincing studies of Ranke, Virchow, Manouvrier, and many others, pointing in no uncertain way to a decided relation between the cranial capacities of men and their psychic abilities. If, as Broca¹ has shown, the skulls of modern Parisians are larger than those of the twelfth century, that the cranial capacity of townspeople is as a rule greater than that of the peasants of the environs (Ranke²), and that the heads of university students have been found to be on the “average greatest and growing for the longest time in the group of most successful men” (Venn³), it would certainly seem that the size of the brain assumes, relatively speaking, that significance due this organ quite as much as, for example, the large size of the vestibular nerve in the *Cetacea* and *Phocidæ* relates to their remarkably skilful equilibristic movements.

A great number of unusually heavy brains found among idiots, imbeciles, criminals, insane, and other defectives, as well as a number among obscure bricklayers, blacksmiths, and common laborers, are fondly thrust before us to be taken in a manner as a refutation of the (to quote their usual phrase) “unfounded doctrine that the intelligence depends upon the size of the brain.” Such cases are nearly always explained by pathological hypertrophy, either congenitally acquired or later developed during disease, and in the case of idiots and imbeciles, invariably characterized by grave defects in structure, such as abnormal increase of the neuroglia with profound diminution of ganglion cells, or abnormal gyral development, and so on. Idiocy may coexist, for instance, with apparent increase of

¹ Broca, *Mémoires*.

² Ranke, *Beitrag. z. Biol.*, 1882.

³ Venn in *Nature*, 1890.

cortical substance and of the ganglion cells, but then the connecting fiber-systems are either retarded in their development or are entirely absent. Such disproportions and distortions render a normal cerebral mechanism out of the question. It were as unfair to include such unhealthy brains in a comparative study of brain-weights in their relation to the mental functions as it would be to assert the large liver in a case of hypertrophic cirrhosis to be better able to perform its functions than the smaller but healthy one. A pathological hypertrophy impairs the functional powers of any organ, but such is not the nature of the increase noted in the brains of certain men distinguished for mental ability. Those great water-logged, pulpy masses in the balloon-like heads of hydrocephalic idiots did not discover and never could have discovered the laws of gravity, invent the ophthalmoscope, create "Hamlet," or found modern natural history. The brains with which we here concern ourselves are those of men with healthy minds, who, in their life-time, attained high distinction in some branch of the professions, arts, or sciences, or who have been noted for their energetic and successful participation in human affairs.

Before we proceed to this analysis it must be emphasized that the weight of the brain is not the all-important factor which still another class of writers avers it to be. Aside from the fact that a certain volume and weight of the brain is absolutely essential to mental integrity, the external appearances—the architecture, so to speak,—often give, as will be shown later, the best indication of an individual's psychic abilities.

In a former contribution¹ the writer has treated the subject more fully than is possible in the present article, but it may not be amiss to reproduce here the series of actual brain-weights collected from all accessible sources (Table I). So far over 120 brain-weights have been collected, of which 103 could be selected, omitting those of noted persons who died insane or whose brains were not weighed in the fresh state. Gambetta's oft-quoted brain-weight is an instance of this kind, for the low figure is due chiefly to the fact that

¹ Spitzka, E. A., "A Study of the Brain-weights of Men Notable in the Professions, Arts and Sciences," *Phila. Med. Jour.*, May 2, 1903.

the body had been treated by an arterial injection of zinc chloride. Other brain-weights, cited elsewhere, are not included here until the figures can be verified from the original sources.

On the other hand, the writer is not at all persuaded to exclude, as has been urged, the brain-weights of Turgeneff and Cuvier. That of the former is an extraordinary figure (2012 gms.), but it is quoted from a very reliable source¹ and was accepted by contemporary authorities, notably such careful men as Topinard and Manouvrier. The physicians who performed the autopsy are certainly above the suspicion of carelessness or dishonesty of purpose. The Russian poet was a tall man, but not unusually so; his head was large, and the report that there was noted a tendency to symmetry of the cerebral convolutions may have some significance in this connection. As for Cuvier's brain, his alleged hydrocephalus, if it existed at all, did not in any way impair the magnificent mental powers of this founder of and most productive worker in the modern natural history. His death occurred at the age of 63, with mind unclouded. Cuvier's skull was large, macrocephalic; but who can say from its inspection that it was not simply and normally kephalonoid, or whether it was enlarged by undue accumulation of fluid? The alleged hydrocephalus of Helmholtz² seems to be based entirely upon the history of slight attacks of vertigo, of very rare occurrence—attacks which he might have had from a multitude of causes other than hydrocephalus, of which, by the way, no physical signs were observable in the shape of his head. Hansemann's vague references to a "slight dilatation of the ventricles" are best explainable by the two apoplectic hemorrhages which terminated Helmholtz's life six weeks later—a mode of death which materially lowered the true brain-weight. If the suggested theory of Perls and Edingen is to have for its foundation cases like these, the arguments in favor of the "advantages of a moderate hydrocephalus" (that is, if followed by a recession) as a means of increasing the brain and the intellectual powers, are of a very problematical nature indeed.

The actual weight of the brains of each of the persons men-

¹ *Procès verbal de l'Autopsie de M. Yvan Tourgueneff*, Brouardel, Descoust, Segond, et Magnin, Paris, Sept., 1883, p. 23.

² Hansemann in *Ztschr. f. Psych. u. Physiol. d. Sinnesorgane*, 1899, 1.

tioned in the table has doubtlessly been influenced by the conditions and causes of death. These variations must, however, be disregarded here, except to mention that, as a general rule, the figures are rather lower than they should be by reason of atrophy from old age or from wasting diseases. In a few cases there is ample proof of this diminution in weight, as for example that of the anatomist and phrenologist Gall, who died at the age of 70, after a most active career, and whose brain had shrunk considerably, weighing only 1198 gms. The report of the autopsy mentions this atrophy as well as the existence of "four or five ounces of fluid" in the subdural space. The skull of Gall had an internal capacity of 1692 cubic centimeters, from which we may fairly infer that the brain must at one time have weighed fully 1475 gms. or more. Bischoff, for a like reason, would raise Tiedemann's 1254 to 1422, and Justus v. Liebig's 1352 to 1450 at least. At the autopsy on v. Liebig considerable fluid was found under the arachnoid, and that "the brain had already lost much of its nutrition during the last few days of life" may be deduced from the fact that it lost in weight very rapidly after immersion in alcohol, namely, 34 percent in the first month. Daniel Webster, with a cranial capacity of 1995 cc., probably had a brain weighing in his prime about 1735 gms., whereas after death it weighed over 200 gms. less. Spurzheim, with a skull capacity of 1950 cc., which would indicate a brain-weight of about 1695 gms., had an actual weight of only 1559 gms. The brain of v. Pettenkofer, who died at the age of 82, showed, Dr Bollinger informs me, a mild degree of atrophy. As I shall describe more fully in the sequel, the brain of Major Powell shows distinct signs of age-atrophy, and those of Whewell, C. Bischoff, Fallmerayer, and others are similar examples.

Aside from these atrophic changes there occur the inevitable errors due to variations in the amount of fluid and blood contained in the cavities and in the brain-substance itself, and in the thickness of the pia-arachnoid. These recur so frequently in brain-weighings that in the absence of special data they may be neglected since the relativity of the weights is not much impaired. So far as I know, all of the brains here tabulated were weighed with the pia-arachnoid; as those of the series weighed by Bischoff, Marchand, Topinard, and

Retzius, used here for comparison, were weighed under like conditions, further allowance need not be made.

Other factors known to affect brain-weight, such as stature,

TABLE I

NAME	OCCUPATION	AGE	BRAIN-WEIGHT
Ivan Turgeneff.....	Poet and novelist.....	65	2012
G. Cuvier.....	Naturalist.....	63	1830
E. H. Knight.....	Physicist and mechanician.....	59	1814
(Theologian; Professor in Freiburg University)?.....		42	1800
John Abercrombie.....	Physician.....	64	1786
Benj. F. Butler.....	General and lawyer.....	74	1758
Edward Olney.....	Mathematician.....	59	1701
Herman Levi.....	Composer.....	60	1690
W. M. Thackeray.....	Humorist.....	52	1658
Rudolf Lenz.....	Composer.....	—	1636
John Goodsir.....	Anatomist.....	53	1629
Hosea Curtice.....	Mathematician.....	68	1612
C. G. Atherton.....	U. S. Senator.....	49	1602
W. v. Siemens.....	Physicist.....	68	1600
George Brown.....	Editor.....	61	1596
A. Konstantinoff.....	Litterateur.....	25	1595
R. A. Harrison.....	Chief Justice, Canada.....	45	1590
F. B. W. v. Hermann.....	Economist and statistician.....	73	1590
J. K. Riebeck.....	Philologist.....	61	1580
Hans Büchner.....	Hygienist.....	51	1560
K. Spurzheim.....	Anatomist and phrenologist.....	56	1559
Lavollay.....	Publicist.....	—	1550
Edward D. Cope.....	Paleontologist.....	57	1545
G. McKnight.....	Physician and poet.....	57	1545
Harrison Allen.....	Anatomist.....	56	1531
J. V. Simpson.....	Physician.....	59	1531
P. Dirichlet.....	Mathematician.....	54	1520
C. A. DeMorny.....	Statesman.....	54	1520
Daniel Webster.....	Statesman.....	70	1518
Lord John Campbell.....	Lord Chancellor, England.....	82	1517
Chauncey Wright.....	Philosopher.....	45	1516
M. Schleich.....	Writer and orator.....	55	1503
Thos. Chalmers.....	Theologian.....	67	1503
Garrick Mallory.....	Ethnologist and soldier.....	63	1503
Edward C. Seguin.....	Neurologist.....	55	1502
Napoleon III.....	Sovereign.....	55	1500
K. H. Fuchs.....	Pathologist.....	52	1499
Louis Agassiz.....	Naturalist.....	66	1495
C. Giacomini.....	Anatomist.....	58	1495
DeMorgan.....	Mathematician.....	73	1494
K. F. Gauss.....	Mathematician.....	78	1492
Ch. Letourneau.....	Anthropologist.....	71	1490
J. W. Powell.....	Geologist and ethnologist.....	68	1488
K. v. Pfeufer.....	Physician.....	63	1488
Wülfert.....	Jurist.....	64	1485
Paul Broca.....	Anthropologist.....	55	1484
G. de Mortillet.....	Anthropologist.....	77	1480
P. Aylett.....	Physician.....	58	1474
Lord Francis Jeffrey.....	Justice and editor.....	76	1471

TABLE I.—*Continued*

NAME	OCCUPATION	AGE	BRAIN-WEIGHT
L. Asseline	Journalist	49	1468
M. D. Skobeleff	General	39	1457
Ch H. E. Bischoff	Physician	79	1452
Hugo Gylden	Astronomer	55	1452
Lamarque	General	63	1449
F. R. v. Kobell	Geologist and poet	79	1445
Mihalkovicz	Embryologist	55	1440
H. v. Helmholtz	Physiologist	73	1440
Dupuytren	Surgeon	58	1437
P. A. Siljeström	Physicist and pedagogue	76	1422
Franz Schubert	Composer	70	1420
A. T. Rice	Diplomat and editor	35	1418
J. E. Oliver	Mathematician	65	1416
Melchior Meyr	Philosopher and poet	61	1415
Joseph Leidy	Morphologist	67	1415
Philip Leidy	Physician	53	1415
George Grote	Historian	75	1410
Nussbaum	Surgeon	61	1410
Joh. Huber	Philosopher	49	1409
C. Babbage	Mathematician and inventor	79	1403
Jules Assezat	Journalist	45	1403
C. v. Kupffer	Anatomist	73	1400
A. Bertillon	Anthropologist	62	1398
Fr. Goltz	Physiologist	68	1395
Coudereau	Physician	50	1390
Wm. Whewell	Philosopher	72	1389
Henry Wilson	U. S. Vice-President	61	1389
Rüdinger	Anatomist	64	1380
Szilagyi	Statesman	61	1380
H. T. v. Schmid	Litterateur	65	1374
A. A. Hovelacque	Anthropologist	52	1373
T. L. W. v. Bischoff	Anatomist	76	1370
K. F. Hermann	Philologist	51	1358
Justus v. Liebig	Chemist	70	1352
v. Schagintweit	Naturalist	51	1352
J. P. Fallmerayer	Historian	71	1349
John Hughes Bennett	Physician	63	1332
Max v. Pettenkofer	Chemist	82	1320
Seizel	Sculptor	50	1312
J. G. Kolar	Dramatist	84	1300
R. E. Grant	Astronomer	80	1290
Walt Whitman	Poet	72	1282
Robert Cory	Physician	55	1276
Edouard Seguin	Psychiatrist	68	1257
Fr. Tiedemann	Anatomist	79	1254
v. Lasaulx	Philologist	57	1250
Laborde	Physiologist and anthropologist	73	1234
L. v. Buhl	Anatomist	64	1229
J. F. Hausmann	Mineralogist	77	1226
B. G. Ferris	Jurist	89	1225
F. J. Gall	Anatomist and phrenologist	70	1198

nationality, body-weight and build, etc., cannot well be considered in these cases; the necessary data are insufficient for the purposes

of a critical estimate of these influences. Marshall has essayed to do this with the brain-weights of Thackeray, Grote, Grant, Babbage, and De Morgan.

In the writer's list are tabulated the brain-weights of one hundred notable persons. Three others since obtained have been omitted, as the round number is more convenient to handle in the

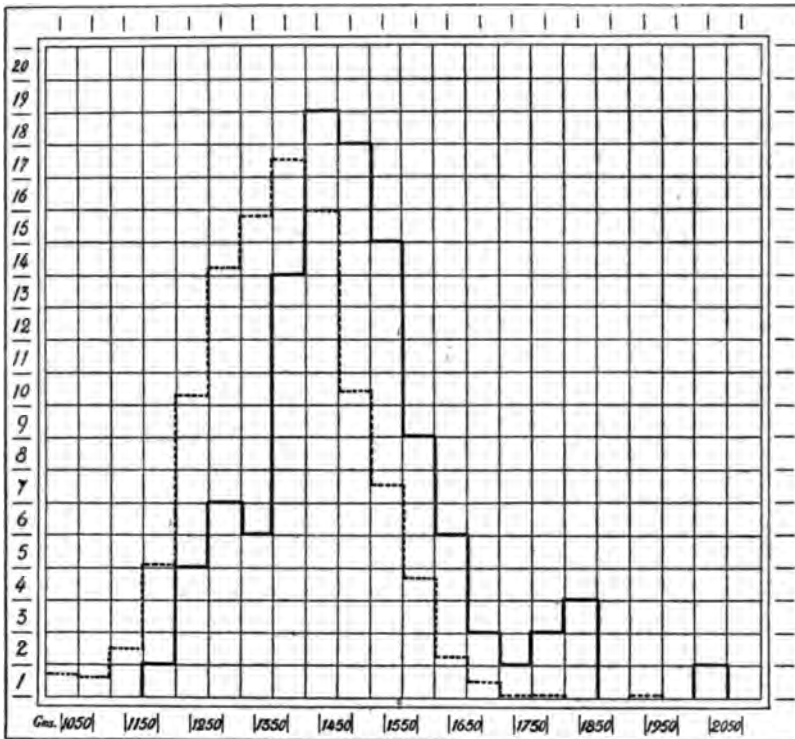


FIG. 32.—Chart showing the relatively greater number of heavier brains among the (100) "eminent men" (solid line), as compared with the distribution of the ordinary brain-weights of the combined series (1334 cases) of Bischoff, Retzius, Marchand, and Topinard, tabulated, for convenience in comparison, on the basis of 100 cases.

analysis. They are those of Major J. B. Pond, the well-known lecture-manager, age 65, brain-weight 1407 gms., after one day in weak (50 percent) alcohol, and two days in 10 percent formal; Johann Zeyer, of Prague, architect, age 56, stature 174: the brain weighed after being dissected and drained 1310 gms., autopsy by

Professor Hlava; Georg Bittner, dramatist, age 57, stature 173, brain-weight immediately after removal, 1556 gms., autopsy by

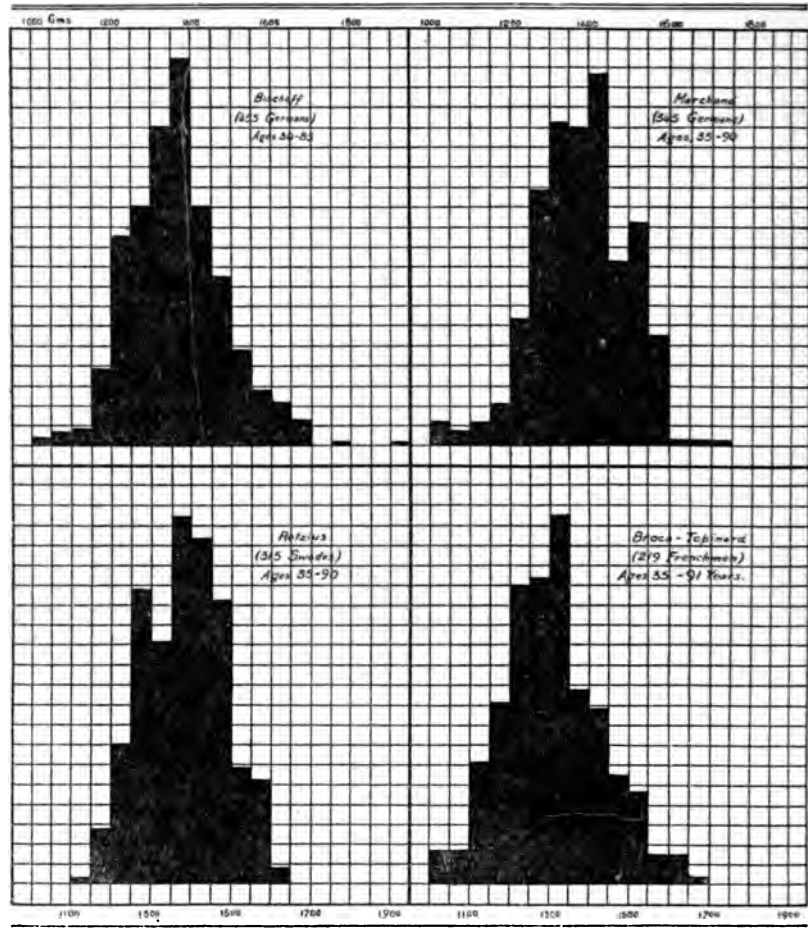


FIG. 33.—Charts showing distribution of brain-weights in the Bischoff (455 cases), Marchand (345), Retzius (315), and Topinard (219) series, each tabulated on a basis of 100 cases.

Professor Hlava. The last two brain-weights were communicated to the writer by Dr Matiegka, of Prague.

In the diagram (figure 32) is shown the range and distribution of these one hundred brain-weights as compared with similar com-

pilations of brain-weights of ordinary or average persons, use being made here of a composite diagram based on the series published by Bischoff, Retzius, Marchand, and Topinard, each series being shown in detail in figure 33, the total number of cases being 1334.

In order that the comparison with the eminent series may be a fair one, only those individuals who range between 35 and 90 years

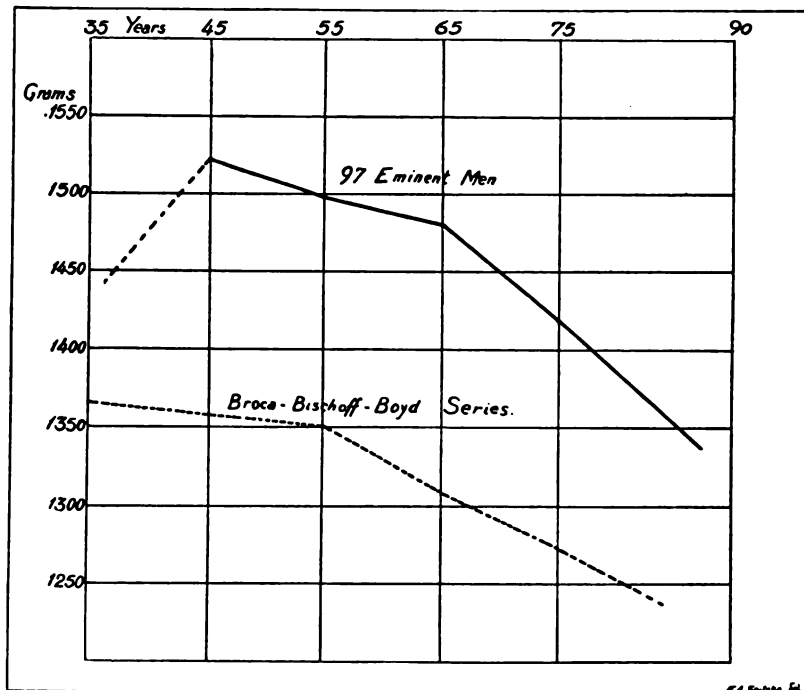


FIG. 34.—Curves of average brain-weights per decade in the series of (97) "eminent men" whose ages are recorded in Table I, compared with the Broca-Bischoff-Boyd series. The curves show the eminent men to be higher in the scale, and further that the senile decrease occurs a decade later than in the "ordinary" series.

of age (excepting Bischoff's series, in which the range is 30 to 85 years) were chosen, for only one of the notable persons, Konstantinoff, is younger. The diagrams show the number of cases per hundred in periods of 50 grams. It is readily seen that there is a relatively greater number of heavier brains among the hundred eminent men; the whole series is moved distinctly upward in the

scale,¹ as is also shown in the curves in figure 34. This latter chart also shows that in the eminent series the senile decrease occurs about a decade later than in the "ordinary series," a fact not without significance in relation to the well-known longevity of geniuses.

To sum up the results in brief, it is shown that the average (arithmetical) brain-weight of one hundred noted individuals is 1469.65 gms., with an average age (97 cases) of 62.4 years. Considering the age of these persons, their brain-weight exceeds the averages generally given for the European brain by more than 100 grams.

In proceeding to a further analysis it seems best to distribute these men of eminence among the three categories of Science, Creative Arts, and Action. In submitting these lists the writer feels constrained to repudiate any intention of maintaining the classification adopted to be one meeting all the requisites involved. The simple division into representatives of Science, Creative Art, and Action is necessitated by the smallness of numbers; a proper rubrication would leave more than one important division represented by only one or two individuals. Aside from the failure of three groups to provide for the various branches of mental activity as manifested in various professions—here conventionally adopted—it were doubtful whether mature reflection would endorse such classification. The latter is far from being a natural one, for it does not regard the intrinsic physiological relations of the professions, arts, and sciences. For example, the sharp demarcation of Art and Science leaves music and mathematics abruptly and remotely separated; yet whatever justifiable presumption exists as to the relations of cortical fields would assign both to closely situated, nay, in almost identical areas, tracts, and neurones of such. Again, to place, for example, generals in one group, is to throw in a chaos of unrelated units the mathematical genius, the geographical explorer, the expert physicist, with the strategic adventurer and opportune gambler of the battlefield chess-board.

With these reservations and limitations I call attention to the

¹ A study of the recorded cranial capacities of notable persons (62 in number) gives similar results.

table in which the results of such a classification are given in condensed form :

TABLE II

CATEGORIES	NUMBER OF CASES	AVERAGE AGE	AVERAGE BRAIN-WEIGHT
I. <i>a</i> , Exact Sciences	12	67.6	1532
<i>b</i> , Natural Sciences	48	63.8	1440.0
(All Sciences)	(60)	(64.5)	(1456.6)
II. Fine Arts, Philosophy, etc.	26	59	1485.0
III. Men of Action (government, politics, military, etc.)	14	65	1490.0
	100	62.4 (97 cases)	1469.65

It is readily seen that the representatives of the exact sciences, such as mathematicians and astronomers, possess the heaviest brains; in the present series, twelve in number, all have brain-weights of over 1400 grams, except the very aged Grant. Next come those in the category of "Men of Action," *i. e.*, statesmen, politicians, and military men. The "Creative Arts" come next, including among others three opera composers (Levi, 1690; Lenz, 1636; Schubert, 1420), with an average of 1582 grams. The average of 48 representatives of the Natural Sciences is the lowest of all, but is still well above the average of ordinary brain-weights. In this category a further analysis brings out significant facts: We find seven anthropologists and ethnologists averaging 64 years of age with 1459.3 grams; eleven anatomists and surgeons of the same age with 1433 grams; while six morphologists and naturalists (Cuvier, Cope, Agassiz, J. Leidy, and v. Schlagintweit) average 1519 grams. All the figures here collected show that, in general, the intellectual status is in some way reflected in the mass and weight of the brain; but further than this, our analysis shows that the brains of men devoted to the higher intellectual occupations, such as the mathematical sciences, involving the most complex mechanisms of the mind, those of men who have devised original lines of research (Cuvier, Cope), and those of forceful characters like Benjamin F. Butler and Daniel Webster, are among the heaviest of all. The results are quite as much in accord with biological results

as the fact that brachycephaly and increased cranial capacity in the most progressive races are in direct and intimate relation to each other. No less significant is the fact that in the primate series we find the higher anthropoids not further removed from the lower races of man with respect to brain-weight, both absolute and relative, than are the latter from a number of men of superior intellect in the white race. The jump from a Cuvier or a Thackeray to a Zulu or a Bushman is no greater than from the latter to the gorilla or the orang, as a glance at the following short list will show :

	BRAIN WEIGHT IN GRAMS	APPROXIMATE RATIO
Turgeneff	2012	1.0
Cuvier	1830	
Ben. Butler	1758	
Thackeray	1658	
Zulu	1050	0.5
Australian	907	
Bushwoman	794	
Gorilla	425	0.25
Orang	400	
Chimpanzee	390	

A gradation is easily demonstrable within the human species, for we may have cranial capacities ranging from about 2000 cc. in some of our most eminent men to less than 1000 cc. in the lowly Hottentot or Florida Indian (Hrdlička). The passage to the anthropoids, however, is undeniably abrupt, though we already have supplied to us a stepping-stone in the *Pithecanthropus* of Dubois.

Before I dismiss the subject of brain-weight I will refer briefly to a popular misconception concerning the make-up of the human brain. One often hears it said of an intellectual man, "he has lots of gray matter." To be sure, the statement is true enough, but not in the sense commonly implied. The brain of man is characterized more by its preponderance of white matter over that of gray matter than for its preponderance of gray matter over the gray matter of the lower animals, excluding perhaps the larger whales and the elephants. The value of arriving at a true estimate of the importance of the ratio of white and gray matter has been greatly enhanced by Flechsig's recent researches. To quote a high authority on this subject (E. C. Spitzka):

"White matter means elaborated and individualized projection of gray matter, as a multitude of parallel telegraph wires means a multitude of stations. If the telegraph wires are in number out of proportion greater than the number of stations, it means a more intricate inter-connection of station to station. Such inter-connection, however, involves a greater amplitude of stations. Therefore the greater the relative preponderance of alba (white matter) over cinerea (gray matter) the higher the intelligence; . . . the more numerous the dendrons, the greater the elaboration and individualization of the neuron. The human brain is more remarkable for its preponderance of alba over cinerea than for its cinerea preponderance over the cinerea of other animals. I would call the order: *Alligator*, *Didelphis*, *Canis*, *Macacus*, *Troglodytes*, *Homo*, a mathematical progression as regards the cinerea, a geometrical one as regards the alba. . . ."

Let us now turn our attention to the surface appearances of the cerebrum. As every one knows, the cerebral surface presents alternating depressions or fissures demarcating the convolutions or gyres. The surface pattern of these fissures and convolutions presents the same general features in all normal human brains, and, to some extent, in those of the higher anthropoids as well. When we come to make more careful comparisons, however, and delve more deeply into the details of fissural and gyral arrangement, we come to recognize many differences, not only in the brains of races and of different individuals, but also in the two cerebral halves of the same individual. When we endeavor to trace the stages of development of man's brain from that of his pithecanthropoid ancestor (insofar as the modern anthropoids afford a means for comparison), we observe how, in a number of ways, and, let us say, in consequence of the demands of evolution, certain regions of the cerebrum assume a greater energy of growth. The cortical expanse of any given area increases with the rise in functional dignity of that area. This is what happens in those regions of "unstable equilibrium" which exhibit the greatest range of variations when brains come to be compared. Such regions, expanding within the cranium, will form more folds or convolutions, spread over a greater area, with an increased number of intervening fissures. The fissures in themselves are not of such paramount importance except insofar

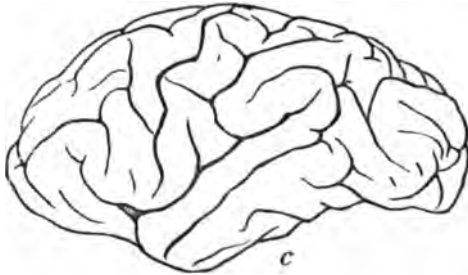
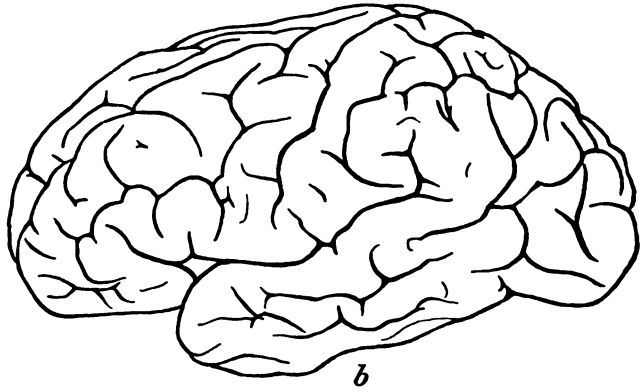
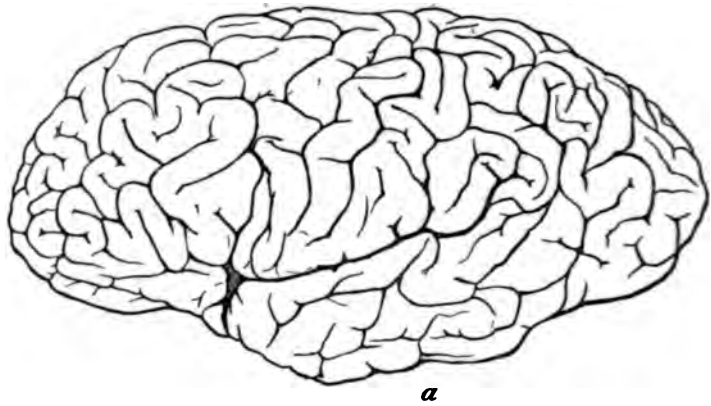


FIG. 35.—*a*, Brain of Gauss, mathematician (after Wagner). *b*, Brain of a Bushwoman (after Marshall). *c*, Brain of gorilla (D. 658, Mus. Roy. Coll. Surgeons of Eng.).

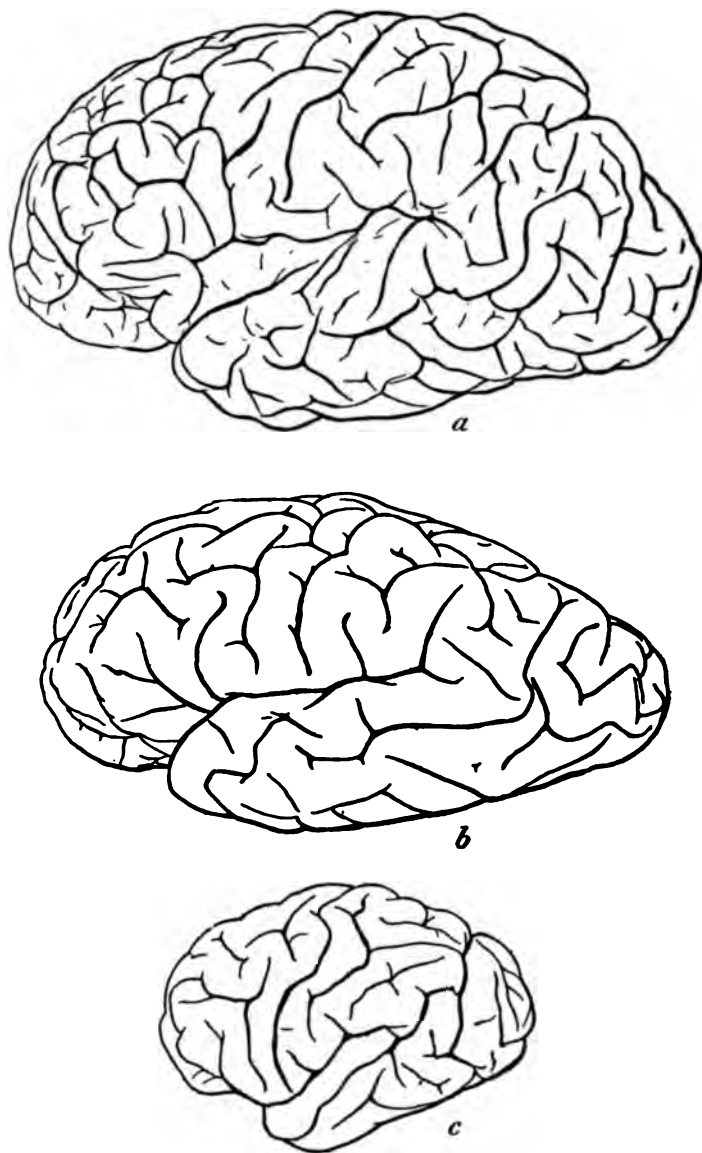


FIG. 36.—*a*, Brain of Helmholtz (after Hansemann). *b*, Brain of a Papuan (drawn by the author from a specimen in the Anatomical Museum, Columbia University). *c*, Brain of chimpanzee (after Flatau and Jacobson).

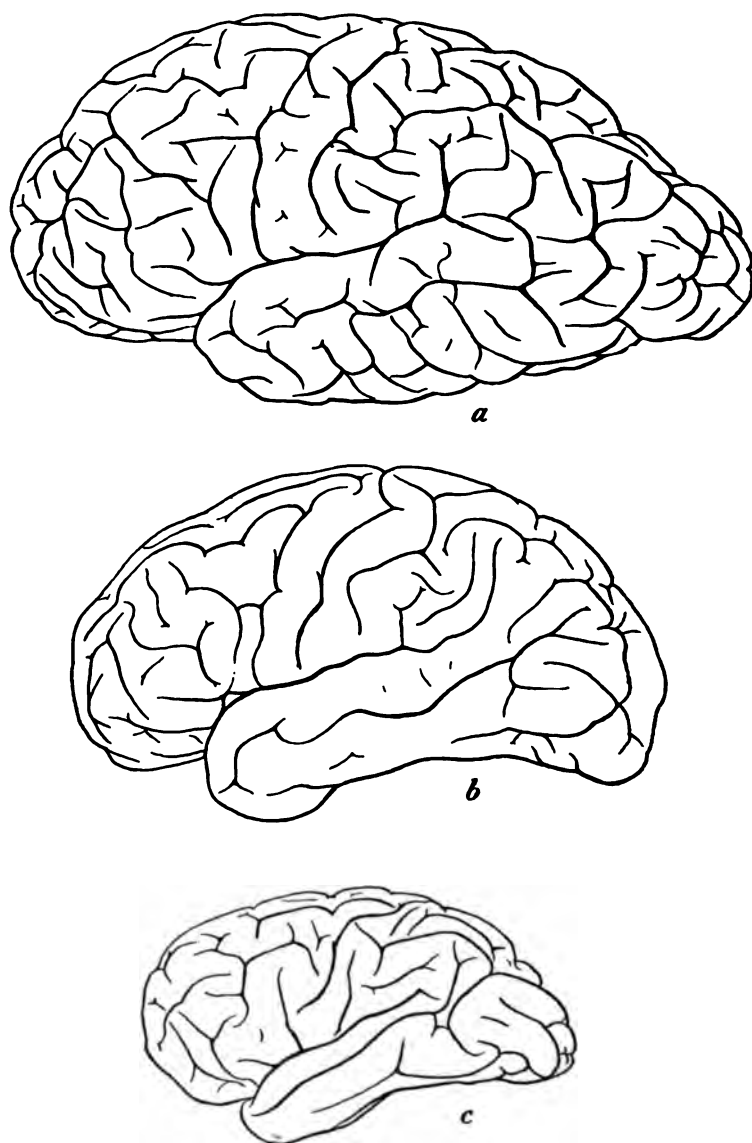


FIG. 37.—*a*, Brain of Siljeström, physicist and pedagogue, also mathematician (after Retzius). *b*, Brain of "Sartjee," or "Hottentot Venus" (after Gratiolet and Bischoff). *c*, Brain of orangutang "Rajah" (drawn by the author from specimen kindly loaned by Dr Harlow Brooks).

as they facilitate the mapping of the cerebral regions under consideration and serve as a useful index of the degree of development. In this light, fissuration would seem to be merely the result of mechanical packing or folding of the cortex; as to the regular appearance of the typical fissures, however, the hereditary factor must not be forgotten.

The fact that certain portions of the cerebrum exhibit different degrees of growth-energy is unquestionably of considerable importance from the neuro-physiological point of view. The higher anthropoids and man possess many points in common as regards

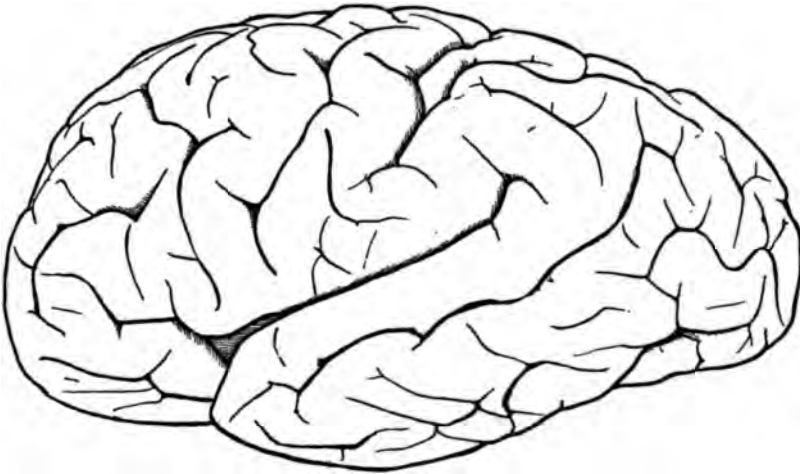


FIG. 38.—Brain of Chauncey Wright (after B. G. Wilder).

structure, habit, mode of life, etc. But over and above these traits man possesses an associative memory, or ability to store and compare sensations, far greater than that of the highest ape; and this supremacy finds its expression, beyond peradventure, in the greater size and complexity of structure of man's brain. But this superiority in structure and size is not merely a uniform expansion of the brain as a whole, but rather of certain portions of it; and just as the differences, for instance, in the extent of the sense-areas throughout the animal series will be seen to be in conformity with the peripheral areas with which they are in connection, so will it be seen that the chief characteristic of the human brain is the im-

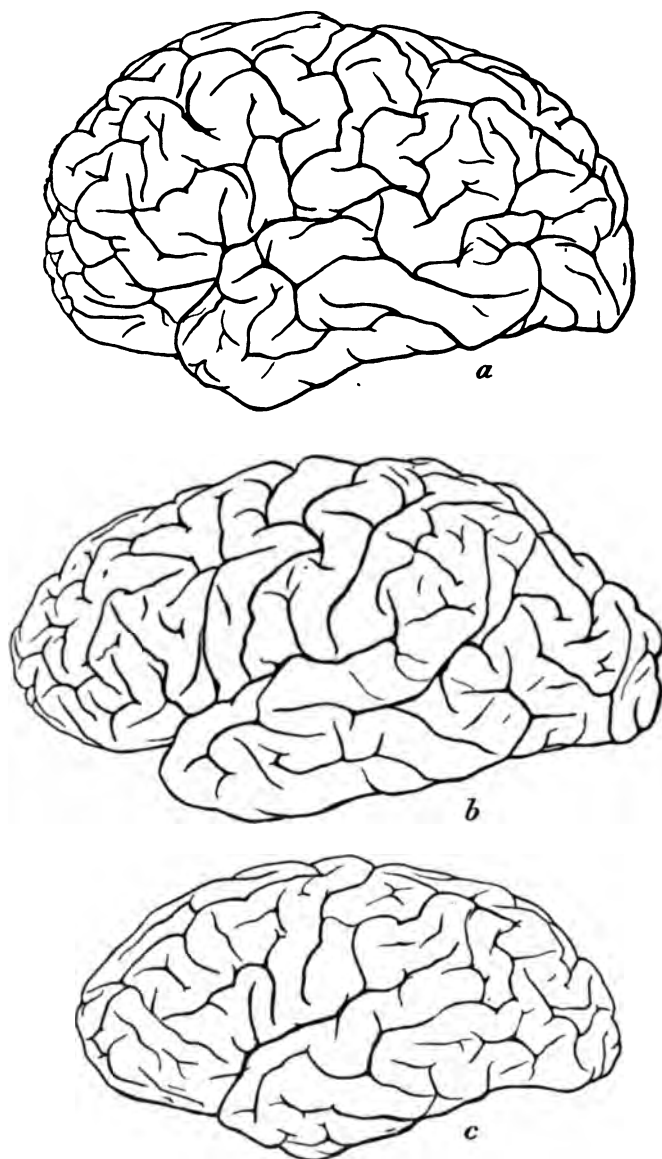


FIG. 39.—*a*, Brain of General Skobelev (after Sernow). *b*, Brain of Professor Altmann, anatomist (from photograph kindly sent by Dr P. Näcke, of Hubertusburg). *c*, Brain of Gambetta (after Duval).

mense extent of the cortical association areas and tracts. At a rough estimate it may be said that the association areas constitute two-thirds of the human cerebral cortex, while only the remaining third, taking the somæsthetic and sense-areas together, is provided with projection fibers chiefly.

But as it is in the association areas (hitherto termed the "silent areas" because, forsooth, we understood them not) that the higher intellectual activities are carried on, it is in these portions of the cortex that the higher feelings assume shape and control or influence the somæsthetic areas with which they are connected. Herein it is that the mind of man differs most from that of the brute. To a slighter yet palpable degree the same differentiation may be made in comparing human minds with one another (figures 35 to 39). That is why such intellectual giants as Gauss and Helmholtz possess brains superior not only in total size as well as in the development and arrangement of the convolutions, but in special cortical fields in particular; in other words the greater area and complexity of the cortical expanse is an expression of the degree of refinement which characterizes the mentality of the individual. One is fairly tempted to say that the contrast between such a brain and that of a Hottentot or a Papuan is as great, if not greater than that between the Hottentot's brain and the brain of a chimpanzee or an orang. The more experienced we become in the examination of brains, the more convinced are we that the external appearances of the cerebrum often give the best indication of the individual's psychic powers. The recent morphological studies of Retzius on the brains of Gylden, Kovalewski, and Siljeström, of Hansemann on that of Helmholtz, of Guszman on that of Rudolf Lenz, of Duval on that of Gambetta, of Papillault on that of Laborde, of Rüdinger on those on several men of science and scholars, and of those by the writer on the two brains of the Seguins, father and son, tend to show that the index of an individual's prominent characteristic is to be found in certain individual peculiarities in the development of one or another cortical region. If the older investigators had been disappointed in their search for definite areas of differentiation in different brains, it had been because there did not yet prevail a thorough appreciation of the complex and but recently understood

mechanisms involved in cerebration, and because of the limited knowledge of cerebral topography.

The evidence that has been gathered by the observers above mentioned, while arguing for territorial differentiation of the cortex, has, as a supplement to the anatomical investigations of Flechsig, furnished us with a comprehensive understanding of certain distinctions between brains of high and of low order. The unusual simplicity of the surface-markings of the brain of Chauncey Wright (figure 38) seems paradoxical and clearly affords the exception that proves the rule. Although we possess but few data as to the ideal average or "standard" pattern of the human brain (the necessity of obtaining which Professor Wilder, of Cornell, has constantly urged us to keep in the public mind), this case is exceptional enough to command attention. Whether the fissural simplicity and gyral width and flatness (not to mention a rare fissural atypic; bilateral interruption of the central f.), "are family characteristics or correlated with Wright's mental and physical deliberateness, light may be thrown upon the problem by the conditions to be observed in his blood-relations or in similarly 'slow but sure' in thought, speech, and act."¹ His slowness of speech and action was very notable; he was large in person, as was Turgeneff, of whose brain it is said that gyral width and bilateral symmetry was marked. That such brains are exceptional seems a safe conclusion to make, even though the number of detailed observations is not very large. In other words, experience teaches us that there is a physiognomy of brain which portrays intellectuality quite as often as does the outward physiognomy. That this so-called cerebral physiognomy is difficult to describe in so many words, or that we are occasionally deceived by it, does not alter the fact that we may learn (generally) to recognize and to judge it. Patient study on a greater amount of suitable material may in the future enable us to express in scientific terms what is now a mere personal conviction. The thought ever recurs to us in such studies: What a pity that we have not the brain of a Newton, a Shakespeare, a Michelangelo, a Beethoven, or an Edgar Allan Poe! How much more useful would be the study of such organs of thought; how elevating, how

¹ Wilder in *Jour. Nerv. and Ment. Dis.*, 1896, p. 706.

inspiring would their lessons be. Hitherto, however, we have examined, almost exclusively, the brains of pauper ne'er-do-wells and criminals.

For purposes of comparison certain measurements of the brain will be found very useful. Of course, the measurement of the brain is rendered a difficult procedure by numerous disturbing factors, depending chiefly on the softness of the organ when fresh, and upon the changes wrought in the process of hardening. A number of systems of measurement have been proposed, but not all of them have stood the test of time and critics. For my own part I find those measurements best which can be reduced from actual to relative values, wherein some unit of length (preferably the maximum hemicerebral length) is used as a basis of expression rather than so many inches or centimeters. Hence I prefer to use centesimals of the hemicerebral length, and by making such records of various brains their comparison with each other becomes comparatively easy. The best ways of measuring the brain are those proposed, among others, by Cunningham, Marshall, Broca, Dide and Chenais, Chiarugi, Giacomini, and Hrdlička. No one of these quite fulfills all the demands for a comprehensive system, and I have hence provisionally chosen those that seemed most desirable to employ and which covered the most salient points. Of course, any method of measurement cannot be safely employed except on brains which have not suffered distortion in the process of hardening.

I will call attention only to a few of the more important methods of measurement which readily afford a means of understanding the relative expanse — be it a preponderance or a reduction — of the lobes of one side as compared with the other, or of one brain as compared with another brain. A plane is selected which passes through the ventral borders of the frontal and occipital poles (figure 40; the base-line is drawn parallel to this arbitrary horizontal plane). To this base-line are drawn ordinates from the cephalic and caudal points, giving in the abscissa the hemicerebral length; this distance is divided into 100 parts or centesimals. Other ordinates are drawn from (1) tip of temporal pole, (2) junction of the presylvian ramus with the sylvian fissure, (3) ventral end

of the central fissure, (4) junction of the episylvian ramus with the sylvian fissure, (5) on the mesal surface, (6) the cephalic border of the callosum, (7) the porta of foramen of Monro, (8) the dorsal end of the central fissure, (9) the caudal border of the callosum, (10)

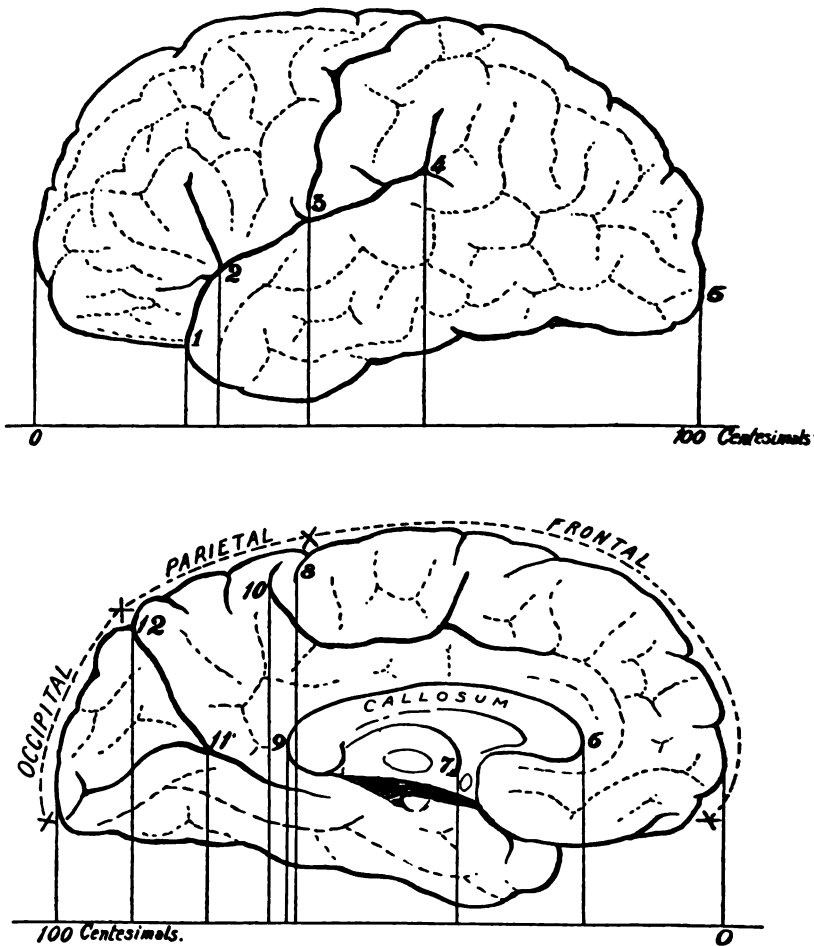


FIG. 40.—Showing some useful methods of brain-measurement.

the dorsal intersection of the caudal paracentral ramus, (11) the junction of the occipital and calcarine fissures, (12) the dorsal intersection of the occipital fissure. The arc measurements of Cunning-

ham, giving the frontal, parietal, and occipital indices, are also indicated in the lower illustration.

Another method which I have found useful, and one which gives a better understanding of the relative size of the frontal lobe as compared with the parieto-occipital areas, consists in cutting out and weighing pieces of sheet-lead of the same size as the mesal surfaces of (*a*) the frontal and of (*b*) the cuneus and precuneus combined. The ratios which these bear to each other differ more or less in different brains, and while I have applied the method to a comparatively small number of brains, such results as I have obtained have more than confirmed my anticipations and encourage me to further extend my researches in this direction. Of two brains of notable persons — one a scholar whose mentality was characterized by the great powers of abstract thought, the other a man of science of unusual observational powers — the frontal lobe predominated considerably in the former, the parieto-occipital area in the latter. Of course the mesal surface only is considered.

This leads me to the discussion of the differentiations of certain cortical areas and their relation to the doctrine of cerebral localization. The history of the evolution of an *Archipithecus* into a *Pithecanthropus* and finally into Man has essentially been the history of a progressive development of the brain, accompanied by the attainment of the erect position and the development of language, abstract thought, and reasoning. When we come to consider the complex anatomy of the human brain, it will be found that the acquisition of these mental functions — language, abstract thought, ideation, and reasoning — have been the chief factors in bringing about its superior structure, and that any given region of the cortex gains in functional dignity with the increase of its associations. When we remember that the cortex of the larger brain of man contains, in round numbers, 9,200,000,000 functional nerve-cells, we need not wonder at man's capacity for the manifold registration of sensations and the numerous transformations that characterize his mental processes. With the increase of knowledge, especially in civilized times, each generation has added its increment; the laws of natural selection provided for the perpetuation of the superior brains with the gradual extinction of the feebler.

In discussing a subject so far-reaching and comprehensive in scope as this, it is impossible to treat adequately all its parts in a paper of this length. Let us consider, therefore, only some of the more important psychical functions of the brain — for instance, that of the faculty of speech.

Speech, as Huxley has said, is perhaps the “most human manifestation of humanity,” and there is no question that the acquisition of this faculty “has afforded the chief stimulus to the general development of the brain.” To quote from Professor Cunningham’s address before the British Association (1901): “Some cerebral variation, probably trifling and insignificant at the start, yet pregnant with the most far-reaching possibilities, has, in the stem-form of man contributed that condition which has rendered speech possible. This variation, strengthened and fostered by natural selection, has in the end led to the great double result of a large brain with wide and extensive association areas and articulate speech, the two results being brought about by the mutual reaction of the one process upon the other.”

Let us examine briefly the evidences of cerebral research which bear upon brain-centers directly concerned with the speech faculty.

In the first place, the center for articulate speech has been localized in the subfrontal gyre (or “Broca’s gyrus”), in the left hemisphere of right-handed persons, and in the right side in left-handed persons. Why this faculty should be confined to the left side of the brain in right-handed persons is yet a matter of debate; it seems to be largely a matter of inheritance — a transmission of functional preëminence as regards associated motor innervations in the left brain. Nearly all observations upon this region agree in ascribing a superior development with reference to size and differentiation in the brains of intellectual persons. Notable cases are those of the orator Gambetta (described by Duval), Professor Laborde (by Papillault), two professors of the University of Freiburg (by Waldschmidt), a number of jurists and lecturers of Munich (by Rüdinger), and the younger Seguin (by Spitzka). Further than this, Rüdinger, Schwalbe, v. Kupffer, and others have found the corresponding region in the skulls of eminent men (Wülfert, Huber, Kant) to bulge much more on the left than on the right side.

A region which I believe, however, to be of not a little importance with reference to the intellectual powers, and of speech in particular, is the insula. This is perhaps the purest association center in the brain, serving to connect the various receptive sense-areas related to the understanding of speech with the somæsthetic emissary centers. This region, usually neglected by most investigators, has been examined with care by the writer, and it has been found that, as a rule, in the brains of intellectual persons, not only is the left insula the larger and more differentiated, but, more than this, the preinsula, which is in close juxtaposition to the cortical center for articulate speech, is most redundant. And the more a man be a gifted dialectician, the more demonstrable does this redundancy seem to be. The appearances in the two Seguin brains were exceedingly interesting. The left insula in both was the better developed, and in the younger Seguin, whose linguistic powers were indisputably remarkable, the preinsular portion was so redundant that the surrounding opercular parts have been crowded apart and a small triangular portion of the insular pole is thus made visible on the lateral aspect. Of course, it were absurd to sustain the proposition by the experience of so few cases; but they strongly justify as a surmise, if not as a scientific probability, this anticipation: that hereditarily transmitted and identifiable individualities will be first satisfactorily determined in the insular district, and they point in the direction of the following logical chain: partly of obtained facts, partly of natural conclusions drawn from these.

In a study of heredity,¹ the results of which were placed at my disposal, covering the parentage and descent of individuals prominent in various fields of science, art, and handicraft, it is found that the cases where both father and son attained distinction sufficiently to merit place (in the biographical encyclopedias) in intellectual fields of labor, they had been of those in whom skilled motor innervations in their association with sensory impressions and registrations were prerequisites. Preëminently is this the case with two professions: that of the composer-musician and that of the philologist. As defects in speech are so likely to be repeated in a family line, it seems that its skilled employment by the ancestor is similarly

¹ By E. C. Spitzka.

reflected in the way of facile acquirability on the part of the descendant. Not unrelated may be the fact that among those recruited for the ranks of linguists of other than philologist parentage, there largely predominate those whose parents had emigrated or who were born on islands, in seaport towns, or in lands where two dialects are spoken, not to mention those in whose families it has been the custom to maintain an ancient tongue for sacerdotal reasons. The speech-faculty in its intimate relations to thought-expression, to memory, in its reading form to sight, in writing to manual muscular innervation, exquisitely hereditary as it is life, and most accurately localizable in the ravages of disease, as shown after death, appears one whose transmission is most likely to be expressed by morphological signs — be they relative and quantitative or purely morphological — and these in and about the island of Reil.

This brief exposition of some of the problems of cerebral investigation may serve to point the way in which present researches should be most vigorously pursued, and while no department of anatomical research is more difficult, the results which we may reasonably expect more than repay the efforts put forth.

III

On the death of Major Powell at Haven, Maine, on September 23, 1902, his remains were embalmed and brought to Washington. Dr D. S. Lamb performed the necroscopy on September 26, about sixty hours after death, the examination being limited to the head. The following is a brief extract from the notes taken at the time.

“Scalp quite adherent. Some adhesion of the brain to the dura. Right side of brain firm and blanched. Left side softer and retained color of blood-vessels. Embalming fluid had not apparently penetrated well. Blood-vessels markedly atheromatous; marked arterio-sclerosis. Brain-weight, 1488 grams. Brain placed in 10 percent formalin.”

The weight of the brain, with the pia-arachnoid still attached, was found by Dr Lamb to be 1488 gms. or 52.5 ounces avoirdupois. After seven months' immersion in the preservative fluid (formal) the parts of the brain weigh :

Left hemisphere (without pia)	544 gms.
Right hemisphere (without pia)	525 "
Cerebellum (with pia)	127 "
Pons and medulla (with pia)	21
	<hr/> 1217 gms.

The loss of 271 gms. (18 percent) is due to the influences of the embalming and preservative fluids, and to the removal of the cerebral pia-arachnoid.

Remembering Major Powell's age (68 $\frac{1}{2}$ years), his rather small stature and bodily build,¹ and the atrophy which accompanied the physical decline of the last year or so of life (not to mention the effect of the embalming fluid), the brain-weight, as recorded, is decidedly above the average, and was undoubtedly very much higher in the best years of his life.

THE CEREBRUM

The cerebrum exhibits a decidedly superior degree of fissural complexity with notable flexuosity of the gyres ; particularly of the pre-frontal, parieto-occipital, and parieto-temporal areas. Signs of atrophy (from old age) are visible throughout, particularly in the somæsthetic areas. On the right side this atrophy is rather more extensive, going well into the occipital lobe. This half also weighs less than the left. The fissures in the motor area gape and the gyres appear somewhat shrunken. There are spots of softening in the right occipital lobe. Viewed dorsally, the cerebrum is seen to be of good breadth throughout, the maximum being at the marginal supertemporal transition. The left frontal lobe is not so squarely formed cephalad, but is a trifle wider and more massive than the

¹ As yet no accurate records of the stature and body-weight have been found. A group of friends of the late Major Powell made a number of estimates which were noted by Dr McGee. The first estimates were all high, but revised estimates were all lower after it had been pointed out that one of the peculiarities in Powell's personality was that of appearing to possess a greater stature than he actually measured. His stature may be taken as having been about 5 feet 6 inches. He regarded his normal body-weight as 165 pounds, though at one time he reached about 190. It must be remembered that this value was affected by the absence of the right arm. His hands and feet were small — strikingly so in contrast with the massiveness of his head ; he ordinarily wore 6-E shoes, and his glove was proportionately small ; his collar measure (loose) was 17 $\frac{1}{2}$; his hats, as Dr McGee recalls, were either 7 $\frac{3}{8}$ strong or 7 $\frac{1}{2}$ scant, according to the range of the maker.

right. Viewed laterally, and comparing the two sides, the left subfrontal gyre is the better developed, *i. e.*, more superiorly differentiated from the common type than the same gyre on the right. The

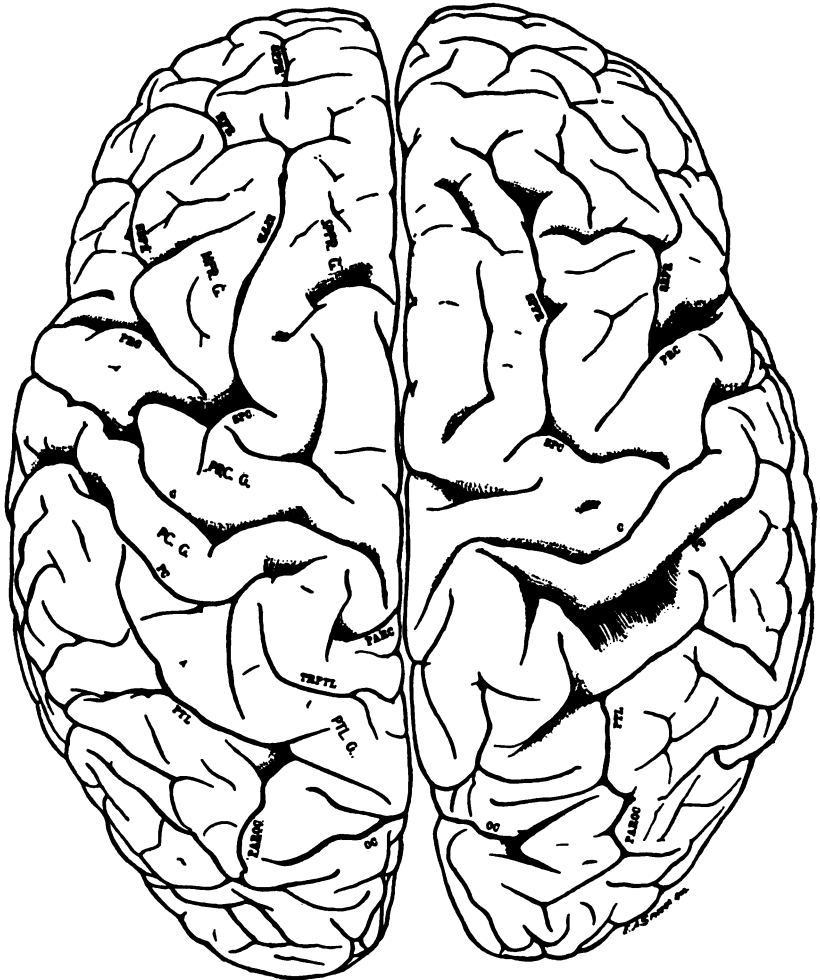


FIG. 41.—Dorsal view of cerebrum of J. W. Powell. ($\times .7$)

left hemicerebrum was somewhat flattened during the hardening process. The most notable difference observable between the lateral views of the two halves lies in the greater extent of the parieto-temporal transitional region on the right side. So great is

the redundancy of these areas that they have considerably encroached upon sylvian fissure, shortening it to 4.1 cm. (6.1 on the left). The table of horizontal distances appended to this descrip-

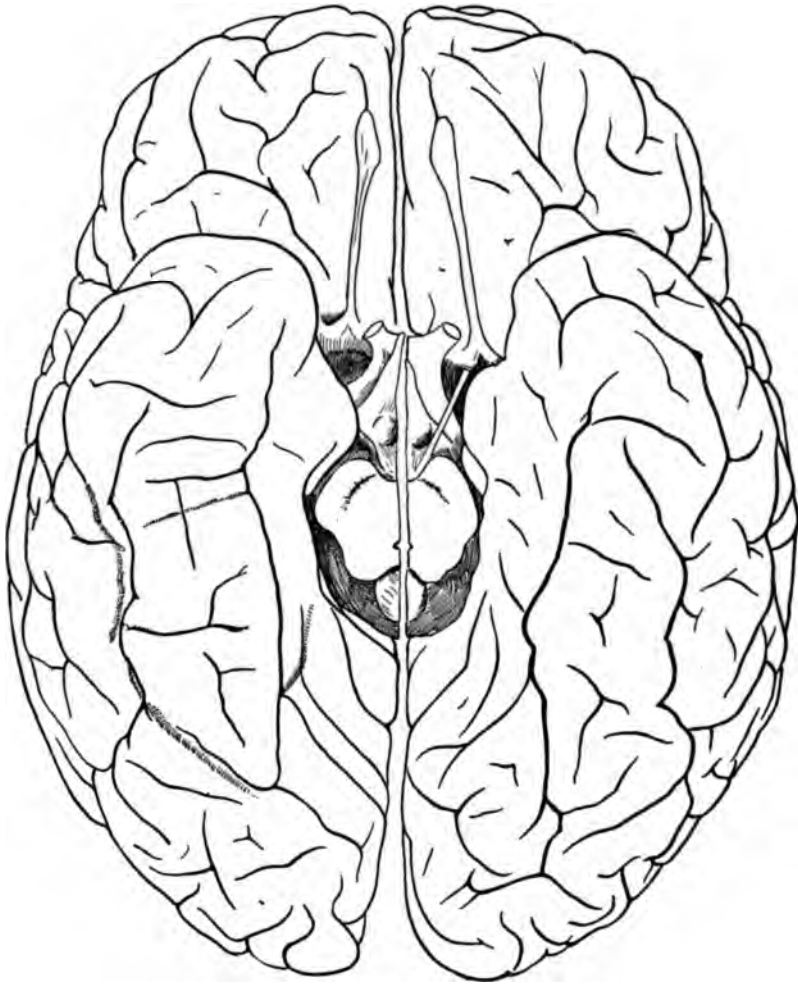


FIG. 42.—Ventral view of cerebrum of J. W. Powell. ($\times .7$)

tion shows the junction of the sylvian with its episylvian ramus to be 12 centesimals (of the total hemicerebral length) further removed from the occipital pole on the right than on the left side. This feature will be discussed in detail in the sequel. A comparison of

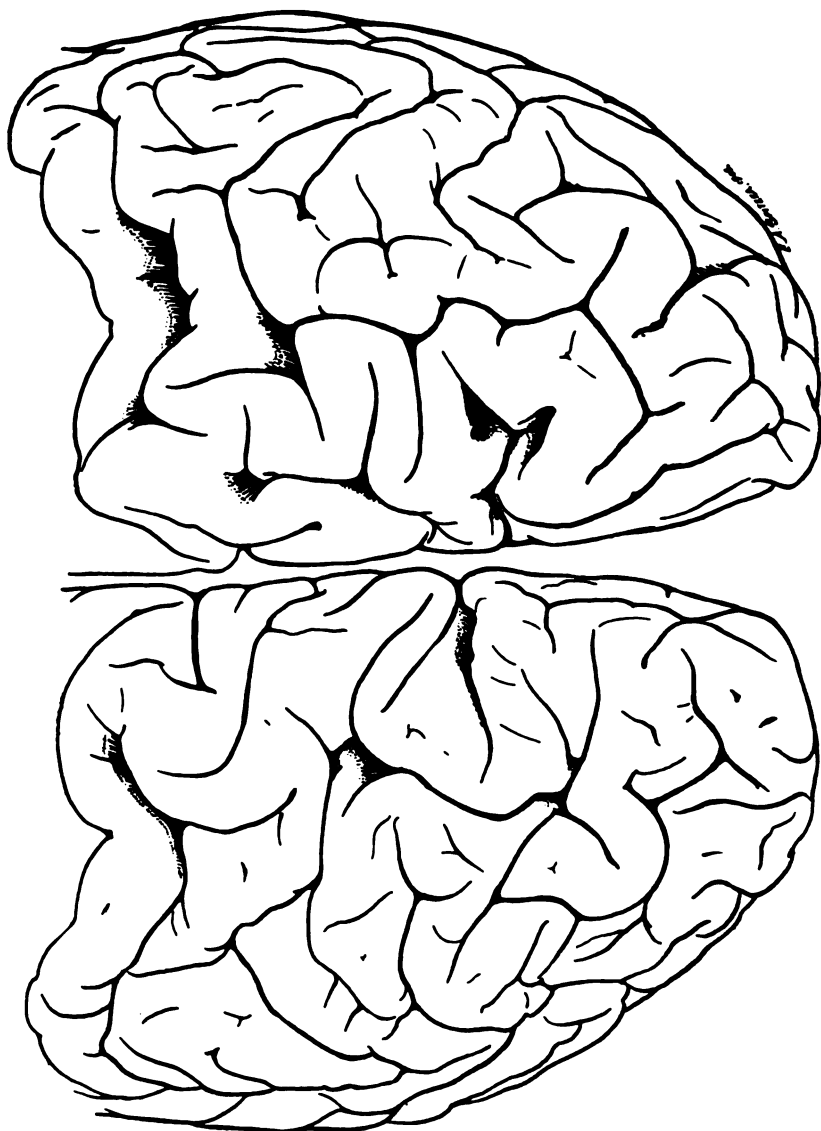


FIG. 43.—View of caudal parts of cerebrum of J. W. Powell. (Natural size.)

the mesal views shows the right frontal lobe (using the caudal paracentral limb as the boundary) to reach further caudad than the left. The combined area of the cuneus and precuneus of the right side is unusually small, owing in some measure to the high sweep of

the calcarine fissure. Pieces of sheet-lead, of uniform density and thickness, cut of exactly the same size as (*a*) the mesal frontal area, and (*b*) the cuneus and precuneus together, show, on careful weighing, the following proportions per 100 on the two sides.

	LEFT	RIGHT
Frontal lobe,	65.6	70.6
Cuneus-precuneus,	34.4	29.4

Viewed ventrally, the temporal lobes are seen to be massive, the left being slightly longer. The impressions of the petrous bones have been preserved. Taking the cerebrum as a whole, neither half can be said to markedly preponderate over the other, except in respect to the greater extent of the subparietal regions of the right side. The amputation of Major Powell's right arm occurred at too late a period in life to effect any notable or positive changes in the naked-eye appearances of the motor region for this member. The loss of the limb was followed, without doubt, by degenerative changes in the spinal and cortical centers and the connecting nerve-tracts, but such changes can only be determined by a microscopical examination. This may be carried out some time in the future.

The epiphysis (pineal body) is unusually large.

LEFT HEMICEREBRUM

THE INTERLOBAR FISSURES

The Sylvian Fissure and its Rami. — The sylvian fissure is 6.1 cm. in length and pursues quite a tortuous course. Its angle with the plane here adopted (see above) is 15° . Its depths are :

Presylvian point,	15 mm.
Medisylvian point,	20 “
Postsylvian point,	29 “

The presylvian ramus is short and bifurcates; the subsylvian is also short and anastomoses with the radiate fissure. The episylvian ramus is 17 mm.; the hyposylvian 23 mm. in length. The basisylvian, measured from the tip of the temporal lobe, is 24 mm. in depth.

Central Fissure. — The central fissure, measured with a moistened string laid in its course, is 10.5 cm. in length and is quite

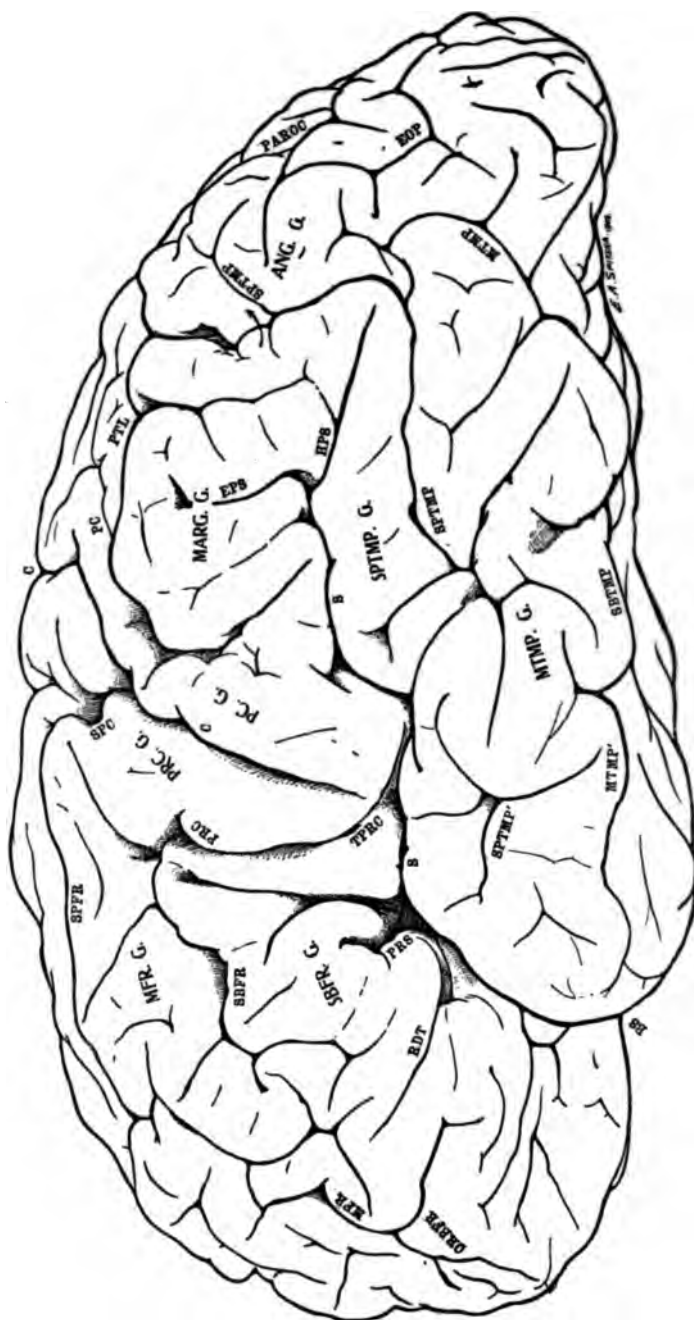


FIG. 44.—Lateral view of left hemicerebrum of *J. W. Powell*. This half is slightly flattened on the dorsum. (Natural size.)

sinuous, especially at the junction of its ventral and middle thirds. It anastomoses cephalad with the supercentral over a vadium 6 mm. in depth. The fissure is deepest (19 mm.) near this anastomosis.

Occipital Fissure.—The occipital fissure attains a length of 3.5 cm. on the meson, and 2.5 cm. on the dorsum. It is quite deep throughout and shows a number of well-marked subgyres in its depths. The intraprecuneal anastomoses with it superficially (vadium, 6 mm.) on the mesal surface.

Calcarine Fissure.—The calcarine fissure passes well caudad without interruption, attaining a length of 4.8 cm.

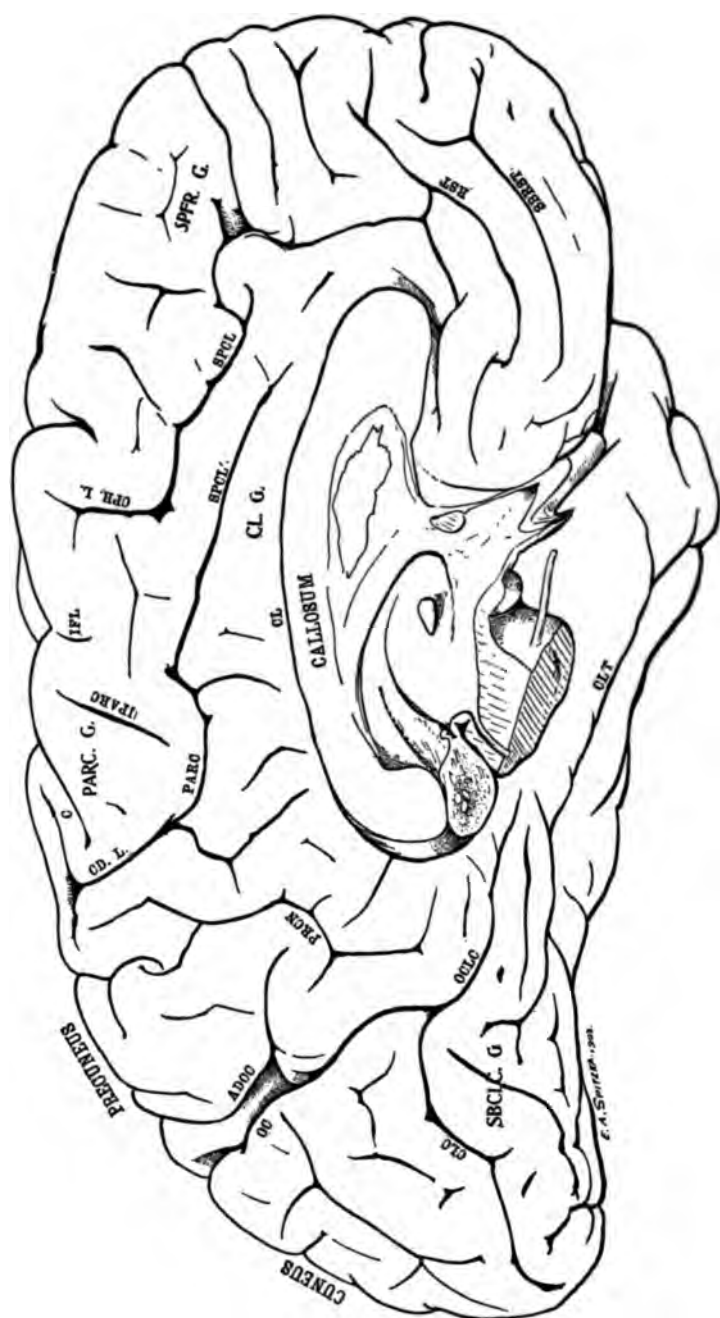
The occipital and calcarine meet at a depth of 20 mm. to pass into the occipito-calcarine stem, which is 3 cm. in length.

FISSURES OF THE FRONTAL LOBE

LATERAL SURFACE. *The Precentral Fissural Complex.*—The supercentral is of the usual zygial shape, freely continuous cephalad with the superfrontal, and anastomosing superficially, caudoventrad, with the central. Mesad of the supercentral, and helping to demarcate the superfrontal gyre from the precentral, there is a tri-radiate (paramesal?) fissure. The precentral passes in the main parallel with the central, till, by its junction with the transprecentral it passes ventrad to dip slightly into the sylvian cleft.

The diagonal fissure is very deep, 2.5 cm. in length and passes deeply into the sylvian cleft. The superfrontal passes cephalad for 5 cm. and then joins the medifrontal laterad. Further cephalad there is a short, independent zygial superfrontal piece. Several paramesial segments mark the superfrontal gyre. The medifrontal fissure springs from the orbitofrontal, pursues a tortuous or rather zigzag course and anastomoses with the superfrontal. The subfrontal springs from the precentral, curves cephalo-ventrad in a sinuous manner and sends off numerous rami. The orbitofrontal forms a Λ with the medifrontal as the stem, and attains a total length of 5 cm. The radiate is 2.5 cm. in length and anastomoses with the subsylvian.

MESAL SURFACE.—The supercallosal fissure is separated into two pieces, resembling the arrangement described by Manouvrier in the brain of Eugen Veron. The caudal, shorter segment passes



from the paracentral, with which it is confluent, well into the callosal gyre. The longer cephalic segment pursues a very tortuous course and sends off a number of rami. The paracentral is a simple curved fissure, terminating on the dorsum in a T-shaped manner by means of the opercular isthmus joining the postcentral and parietal gyres. The cephalic paracentral limb is separated from its stem, remaining joined to the cephalic supercallosal segment, an arrangement noted by the writer in 14 out of 160 hemispheres.¹ Only a shallow groove marks the usual site of the inflected fissure. There is a well-marked rostral fissure.

ORBITAL SURFACE. — The orbital fissure is of typical zygial shape, with transversely directed stem. Three other independent orbital segments mark this surface. The olfactory fissure is 4.8 cm. in length.

GYRES OF THE FRONTAL LOBE

LATERAL SURFACE. — The precentral gyre resembles that of the right side in the general configuration and form as well as in the partial interruption by the anastomosis of the supercentral with the precentral. Compared with the postcentral gyre it is much larger and more massive in all respects, and is particularly broad in its middle and ventral thirds. The superfrontal gyre is of good breadth throughout and marked by several fissural segments. The medial frontal gyre is of good width (2–3 cm.) and marked by numerous fissural segments and rami of adjoining fissures, mostly transverse in direction. The subfrontal gyre, compared with that of the right side, is a trifle more differentiated from the common type, but otherwise resembles it in size and general shape.

MESAL SURFACE. — On the meson the superfrontal gyre is of greater area and is more richly fissured, particularly by transverse segments, than that of the right side. The paracentral gyre is long, but less broad than its fellow on the right side, and joins the callosal gyre by means of the oblique isthmus interposed between the two supercallosal fissural segments.

ORBITAL SURFACE. — The orbital surface is a trifle broader and a little more intricately convoluted than that of the right side.

¹Spitzka, E. A., "The Mesal Relations of the Inflected Fissure. Observations upon One-hundred Brains," *N. Y. Med. Jour.*, January 5, 1901.

FISSURES OF THE PARIETAL AND OCCIPITAL LOBES

LATERAL SURFACE. — The postcentral segments are confluent, forming a long (9 cm.), sinuous, and deep fissure which bifurcates dorsad, anastomoses superficially with the parietal, and sends off a few short rami. There is a short transpostcentral. The parietal, 5 cm. in length, anastomoses cephalad with the postcentral over a shallow vadium, caudad with the paroccipital, and in its course is also joined by the intermedial. The paroccipital fissure is of irregular zygial shape; the stem is 3 cm. long, the cephalic and caudal stipes are longer than the corresponding rami. The parietal joins the very short cephalic ramus at a depth of 11 mm. There is a post-paroccipital, and, cephalad of the occipital and anastomosing with it, a fissure which may represent the adoccipital which is sometimes better marked in other brains.

The exoccipital complex is very difficult to analyze. One segment is readily recognized as the "occipitalis lateralis" of the older authors, but nothing definite can at present be said about the other fissures in the neighborhood other than that they tend to a transverse course.

MESAL SURFACE. — The precuneal fissure is irregularly zygial and independent of neighboring fissures. There are several intraparcuneal pieces; one anastomosing with the paracentral. The cuneus is marked by a well-developed postcuneal, and by shallow segments of the cuneal fissure.

GYRES OF THE PARIETAL AND OCCIPITAL LOBES

LATERAL SURFACE. — The postcentral gyre is narrow and quite tortuous. The parietal is notable for its great width in the cephalic portion, and is on the whole more extensive than the corresponding region on the right side. The paroccipital gyre, like its fellow, is richly convoluted and of good size. The divisions of the subparietal, taken together, occupy a lesser area than the subparietal regions on the right side. The angular gyre is notably small, but aside from this difference the two sides agree in being much more complexly convoluted and more intricately fissured than is shown in average brains.

MESAL SURFACE. — The cuneus is larger than that of the right

hemisphere, as is also the precuneus, and their surfaces are more richly fissured.

FISSURES OF THE TEMPORAL LOBE

LATERO-VENTRAL SURFACES. — The supertemporal is broken up into three segments by isthmuses which join the super- and mediotemporal gyres just ventrad of the pre- and medi-sylvian regions. The caudal piece is the longer (11 mm.), and anastomoses with a ramus of the parietal and with the mediotemporal in the temporo-parietal transition. The middle supertemporal segment is zygal, and the cephalic one is a shallow triradiate fissure. The mediotemporal consists of a segment in the cephalic region of the lobe, 6 cm. in length, and of another segment confluent with the subtemporal near the occipito-temporal transition. Further dorsad this piece also joins the supertemporal. The subtemporal pursues a tortuous course, attains a length of 9 cm., and anastomoses caudally with the mediotemporal as described above. The collateral begins well cephalad, bifurcates caudad, and attains a length of 11.5 cm. The lateral limb ends in a zygal piece. The amygdaline (post-rhinal) fissure is indicated by a shallow groove.

GYRES OF THE TEMPORAL LOBE

The gyres of the temporal lobe exhibit a notable flexuosity and rich fissuration throughout. They are all massive and of bold contour, and the large number of fissural segments and ramifications give to the lobe an appearance of a superior degree of complexity.

THE INSULA

The left insula (island of Reil) shows a prominent preinsular pole. There are five preinsular gyres and one postinsular gyre, with eight peri-insular digitations in all. The fissures are deep, as insular fissures go (transinsular f., 6 mm.), and the general pattern is of a superior kind. The longitudinal (cephalo-caudal) diameter of the insula is 5.2 cm.

RIGHT HEMISPHERE

THE INTERLOBAR FISSURES

The Sylvian Fissure and its Rami. — The sylvian proper is unusually short, being 4.1 cm. between the points of origin of the presylvian and episylvian rami. Comparison with the left half

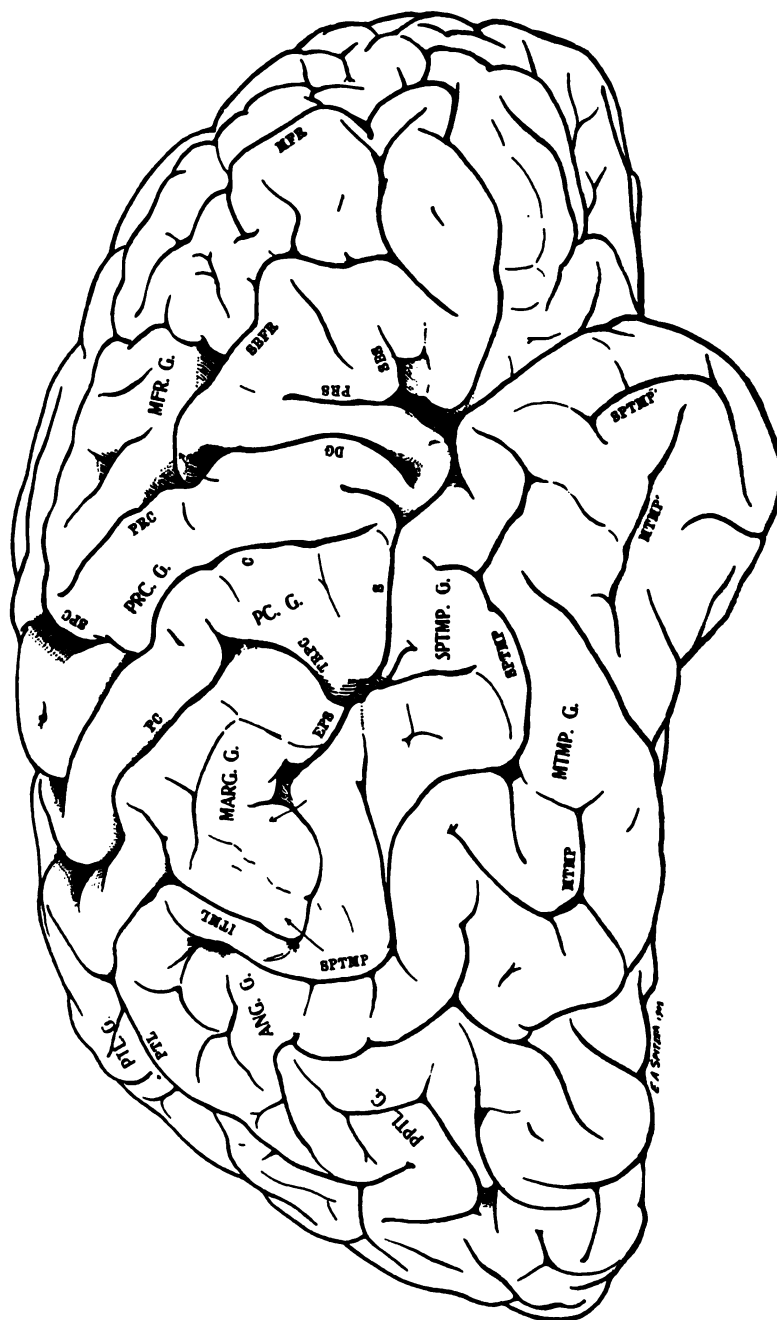


FIG. 46.—Lateral view of right hemisphere of J. W. Powell. (Natural size.)

shows this shortening to be due chiefly to the encroachment of the redundant subparietal regions, particularly the angular gyre. A similar redundancy, but more appreciable in the marginal gyre region, was found by Retzius in the brains of the mathematicians Gyllen and Sonya Kowalewski, and the pedagogue and physicist Siljeström, also endowed with a superior mathematical faculty. In Powell's brain, the redundancy of the subparietal association area is most marked in the region adjacent to the visual centers; the marginal gyre is crowded cephalad rather than itself redundant.

The sylvian angle is 20° . The presylvian and subsylvian rami appear on the external aspect to spring from a common stem. On examining the depths of the sylvian cleft it is found, however, that these two rami spring from the circuminsular fissure independently of each other, and their superficial confluence is explained by the reduction of the preoperculum. The depths of the sylvian fissure are :

Presylvian point,	15 mm.
Medisylvian point,	23 "
Postsylvian point,	29 "

The episylvian is 2 cm. in length. Its walls are obliquely inclined, so that the temporal portion of the marginal gyre overlaps the parietal part in an opercular manner. Dorso-cephalad it is joined by the transpostcentral; caudad, by means of a shallow fissure, it anastomoses with the intermedial-parietal. The basisylvian is 23 mm. in depth.

The Central Fissure. — The central fissure is 11.3 cm. in length, but is not particularly flexuous. It anastomoses very superficially with the supercentral (vadum, 5 mm.). Its maximum depth (21 mm.) is near this anastomosis. Its dorsal end appears on the mesal surface for 2 cm.

The Occipital Fissure. — The occipital fissure is 2.5 cm. in length on the mesal surface, and the same on the dorsum. It is very deep (28 mm.) and in its depths exhibits a number of interdigitating subgyres. On the dorsum there is a deep fissural ramus giving an appearance of bifurcation.

The Calcarine Fissure. — The calcarine fissure is sinuously curved, simple, and unramified. Its length is 5.5 cm.

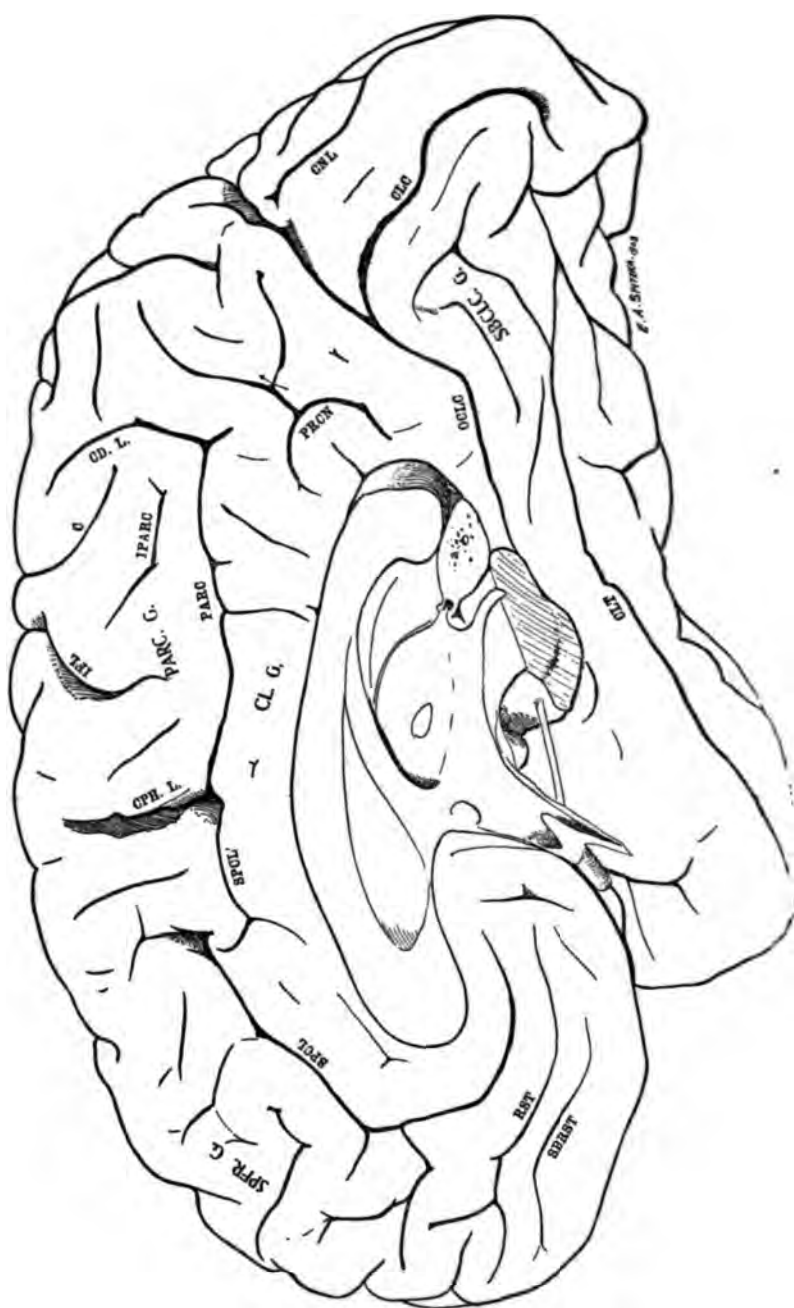


FIG. 47.—Mesal view of right hemisphere of J. W. Powell. (Natural size.)

The occipito-calcarine fissural stem is 4 cm. in length and closely approaches the hippocampal fissure.

FISSURES OF THE FRONTAL LOBE

LATERAL SURFACE. *The Precentral Fissural Complex.*—The supercentral is triradiate; apparently a zygial fissure with one limb suppressed, and in other respects resembling the corresponding fissure on the left side. The precentral is a straight segment, 4 cm. in length, deeply confluent with the subfrontal fissure and joined superficially (vadum, 9 mm.) by the diagonal. There is a short transprecentral.

The superfrontal passes cephalad from its origin in the supercentral for 6 cm., anastomosing across the medifrontal gyre with the subfrontal fissure. Two paramesial segments mark the superfrontal gyre. The medifrontal springs from the orbitofrontal and passes caudad in an irregular path for 6 cm. The orbitofrontal is 7 cm. in length. The radiate fissure, 3 cm. in length, is joined by the subfrontal fissure.

MESAL SURFACE.—The supercallosal fissure is again in two segments separated by an oblique superfrontal-callosal isthmus. The short caudal piece springs from the paracentral. The cephalic segment attains a length of 7.5 cm. The paracentral is long (4 cm.) and deep and has distinct cephalic and caudal limbs. There is a short longitudinal intraparacentral fissure. The inflected is a deep and well-marked fissure, traversing the dorsi-mesal margin and appearing for 2 cm. on both the mesal and dorsal aspects. The rostral and subrostral fissures are well marked.

ORBITAL SURFACE.—The orbital fissure is of zygial shape with its cephalo-mesal ramus (stipe) separated by a shallow vadum. The caudal rami, with the stem, form what is commonly described as the "transverse orbital fissure" of Weisbach. The olfactory fissure is 5 cm. in length.

GYRES OF THE FRONTAL LOBE

LATERAL SURFACE.—The precentral gyre, like the corresponding convolution on the left side, is broad and massive, and likewise partially interrupted by the supercentral ramus. The superfrontal

gyre is a trifle less wide, the medifrontal a trifle broader than on the left side. The subfrontal gyre is of the common type with small preoperculum.

MESAL SURFACE. — On the mesal aspect the superfrontal gyre is not so broad nor so richly fissured as on the left side, but in these respects is nevertheless superior to average brains of whites. The paracentral gyre is larger than the left.

ORBITAL SURFACE. — This region is not so squarely formed nor so broad as that of the left side, and the fissuration is of simpler degree. The tendency to the formation of a transorbital fissure demarcates a good-sized postorbital gyre with three sagittally directed preorbital gyres.

FISSURES OF THE PARIETAL AND OCCIPITAL LOBES

LATERAL SURFACE. — As on the left side the postcentral segments anastomose quite deeply to form a long fissure which is bifurcated dorsally; ventrad it runs into the sylvian cleft by means of the transpostcentral, making its total length 9 cm. The parietal is independent of the postcentral and joins the intermedial cephalad, the paroccipital caudad. On the whole it lies further mesad than the corresponding fissure on the left side owing to redundancy of the subparietal parts, particularly of the angular gyre. The fissure shows numerous interdigitating subgyres in its depths. The paroccipital is of the typical zygal shape; its stem is 2.5 cm. in length. The exoccipital fissuration is exceedingly complex; the interpretation of the arrangement in this region is too difficult to yield satisfactory results in the present state of our knowledge.

MESAL SURFACE. — The precuneal fissure is of zygal shape, with its caudo-dorsal ramus partially separated off by a vadum. The cuneus is marked by a cuneal (or postcuneal?) fissure.

GYRES OF THE PARIETAL AND OCCIPITAL LOBES

LATERAL SURFACE. — The postcentral gyre is well-formed but narrow, especially in its dorsal portion. The parietal is of smaller size than on the left; the paroccipital simple but of good size. It is in the subparietal parts that a notable differentiation and redundancy becomes apparent. The measurements in the appended

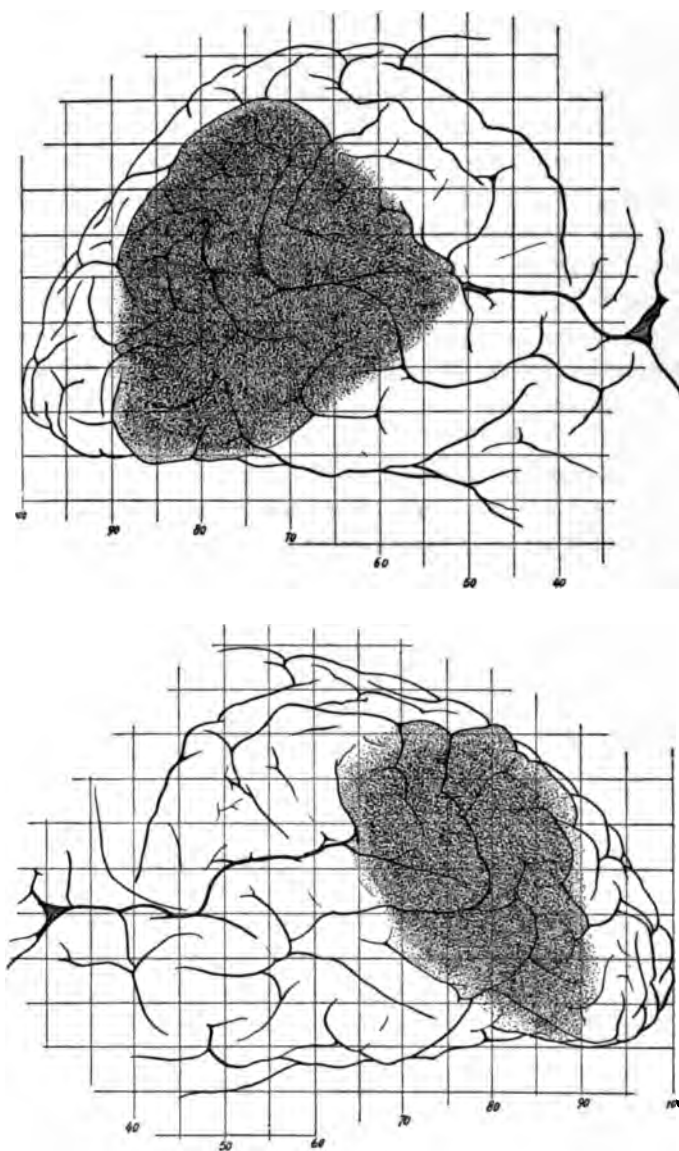


FIG. 48.—Views of right (upper figure) and left (lower figure) parieto-occipito-temporal regions; corresponding parts shaded. (The squares mark off areas in centesimals of the cerebral length.)

table show how the relative increase of this portion of the brain has encroached upon the sylvian fissure. Other special measurements corroborate these. The curve from the point of junction of the episylvian with the sylvian to the occipital pole is 11.2 cm. on the right, 10.0 cm. on the left. The curve from the same point to the dorsi-mesal margin across the parietal lobe is 9.2 cm. on the right, and 8.3 cm. on the left. The whole region is richly fissured, the angular gyre particularly so.

MESAL SURFACE. — Both the cuneus and the precuneus are much smaller on this side. The cuneus particularly is much reduced by the displacement dorsad of the calcarine fissure by the broad, redundant subcalcarine gyre. The surface-markings of these regions are quite simple.

FISSURES OF THE TEMPORAL LOBE

LATERO-VENTRAL SURFACE. — The supertemporal fissure is notable for its tortuous course and numerous ramifications. The larger segment attains a length of 12 cm.; the shorter segment lies cephalad and reaches to the temporal pole. The mediotemporal fissure is represented by three separate segments. The subtem-

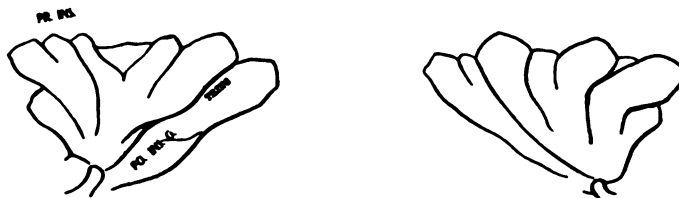


FIG. 49.—Left and right insulae of brain of J. W. Powell. ($\times .63$)

poral attains a length of 9 cm., and caudally bends sharply dorsad on the lateral surface, anastomosing with a mediotemporal segment. The collateral pursues a straight course, 11 cm. in length, while the amygdaline is merely indicated by a shallow groove.

GYRES OF THE TEMPORAL LOBE

The supertemporal is rather more massive than that of the left half. In other respects the temporal gyres of the two halves resemble each other in the superior degree of development generally and in the flexuosity of the gyres and rich fissuration in particular.

THE INSULA

The insula resembles that of the left side in general pattern, but is of more rounded-off contour, for it does not exhibit the marked polar eminence nor yet quite the degree of differentiation from the common type as shown in the left insula. Its longitudinal diameter is 4.6 cm. (6 mm. less than that of the left).

PRINCIPAL MEASUREMENTS OF THE CEREBRUM (AFTER HARDENING)

	CENTIMETERS
Maximum length, left hemisphere,	17.4
Maximum length, right hemisphere,	17.4
Maximum width of cerebrum,	13.8
(Cerebral index, 79.3)	
Horizontal circumference,	50.3
Left semi-circumference,	25.2
Right semi-circumference,	25.1
Maximum width, left hemisphere,	7.1
Maximum width, right hemisphere,	6.7
Left occipito-temporal length,	13.6
Right occipito-temporal length,	13.0
Length of callosum,	7.4
(or 42.53 percent of the total hemispherical length.)	
Left centro-temporal height,	10.1
(or 58.0 centesimals of cerebral length.)	
Right centro-temporal height,	10.4
(or 59.7 centesimals.)	
Left centro-olfactory height,	7.7
(or 44.2 centesimals.)	
Right centro-olfactory height,	8.0
(or 45.9 centesimals.)	

NOTE. — In estimating the last four measurements, it must be remembered that the left hemisphere was slightly flattened in the process of hardening.

ARC MEASURES ALONG DORSI-MESAL MARGIN (CUNNINGHAM'S METHOD)

Left Hemisphere

	CENTIMETERS
1. Cephalic point to central fissure,	15.5
2. Central fissure to occipital fissure,	5.0
3. Occipital fissure to occipital pole,	5.3

Right Hemicerebrus

1. Cephalic point to central fissure,
2. Central fissure to occipital fissure,
3. Occipital fissure to occipital pole,

CEREBRAL INDICES (BASED ON THE ARC M

	Left
Frontal index,	60.1
Parietal index,	19.1
Occipital index,	20.1

HORIZONTAL DISTANCES (EXPRESSED IN CEREBRAL
HEMICEREBRAL LENGTH

From the cephalic point to :

1. Tip of temporal lobe,
2. Sylvian-presylvian junction,
3. Ventral end of central fissure,
4. Sylvian-episylvian junction,
5. Caudal point,
6. Cephalic edge of callosum,
7. Porta (foramen of Monro),
8. Dorsal end of central fissure,
9. Dorsal intersection of paracentral fissure,
10. Caudal edge of callosum,
11. Occipito-calcarine junction,
12. Dorsal intersection of occipital fissure

CEREBELLUM, PONS, OBLONGATE

These parts are all in good proportion of development. The cerebellum is well developed. The pons is of good size and the medulla oblongata is well developed. The principal measurements of the cerebellum are:

- Maximum height,
- Maximum cephalo-caudal diameter :
 - Left hemisphere,
 - Right hemisphere,
- Dorsal length of vermis,
- Maximum depth of caudal incisure,
- Maximum lateral width,

The measurements of the pons are :

	CENTIMETERS
Maximum length,	2.6
Maximum thickness,	2.75

RECAPITULATION

To recapitulate, the most notable features are :

(a) The weight of the brain, 1488 grams, which, for a man of small frame aged 68½ years is well above the average.

(b) A superior degree of fissural complexity and flexuosity of the gyres not affected by the atrophy accompanying old age.

(c) Superior degree of differentiation of the left subfrontal gyre (*i. e.*, emissary speech-center) as compared with that of the right.

(d) The left insula (*i. e.*, associative center for the speech faculty) exhibits a slightly superior differentiation; the preinsular pole is much more prominent than on the right, and the total size is somewhat greater.

(e) Great redundancy of the subparietal regions (*i. e.*, marginal, angular, and postparietal gyres on the right side, encroaching considerably upon the sylvian cleft.

(f) Preponderance of right frontal lobe (mesal surface) over the left, and a proportionate reduction of the right cuneus-precuneus as compared with the left.

(g) The precentral gyres are much wider and more massive than the postcentral.

(h) The supertemporal fissures are interrupted at about the same site on both sides.

(i) The epiphysis (pineal body) is unusually large.

IV

In the endeavor to correlate if possible the principal or most striking features of the cerebral anatomy with Major Powell's chief mental characteristics, the writer labored under the great disadvantage of never having had the opportunity of meeting the man during life. At Dr McGee's kind suggestion, the writer turned to some forty or more of Powell's acquaintances and friends (among them many eminent scholars) with the request that they give their estimate, briefly expressed, of his leading mental characteristics of mind

and action and of his relative place among this country or in the world. In wording taken to avoid suggesting anything that was a biased expression of opinion or which was eulogistic phrases. The writer desired to show in what way Major Powell's mental action and the results of this canvass were most gratifying. Replies were received from nearly every one a clear and to the point, and the writer believed to obtain from them a fairly good composition of chief characteristics and mental make-up.

It is but just to mention here that the writer commented upon the cerebral features in the Major Powell's mental characteristics some of the letters of inquiry. In address to the Anthropological Society of Washington (May 12, 1903) he stated, that *the great development of the association area (particularly in the right or left half) probably corresponded to a superior ability to receive the impressions in the visual, auditory, and tactile form the concept sphere*. That his friends and associates corroborated, in general, was indeed gratifying; the more so as all mental traits and characteristics difficult or impossible to find on brain-surface. But here was a brain without any remarkable redundancy and organic superiority in any region of known function; a fact, which, if it were to lead to the deduction that the intellect should be correspondingly developed.

Such argument is not mere guesswork. It will recall for a moment the related doctrines that the brain is large in osmotic, small or absent in animals in which the pyramidal tract is well-developed in animals in which the voluntary usage of the extremities is well-developed in animals like the elephant and the dolphin. If the relation of bodily function and brain-structure goes on, the functions must do so likewise.

Here let us recall the very pertinent distinction between the brain of man and that of the anthropoids where the association (and therefore intellectual) areas are superiorly developed in the former as compared with the latter. Let us make a closer analysis of the matter in order to see in how far this holds true in the study of Powell's case. The writer thinks that he cannot do better than to reproduce selections from the replies received. It is deemed best, for the present at least, to omit the names of the authors of the passages here cited :

"As a thinker he seemed marked by unusual independence. He had a vast body of facts and experiences all his own and gained at first hand, and upon these he based his thinking."

"The Major was of a decidedly reflective turn of mind ; he observed well, sharply, and he knew well to use his facts as bases for good inductions."

"While he was president of the Anthropological Society, a position he held for many years, he rarely failed to take part in the discussion of any communication brought before the society, and it was his special function in such discussion to point out the relation of the ideas of the communication to the broadest generalizations of the science."

"His method of observation perhaps had special character in it, in that it was usually controlled by previous generalization and theoretic considerations, and thus made systematic. He did not mention or publish observations by themselves, but only in classified form, or as illustrative of theoretic ideas."

"In natural phenomena he had remarkable powers of perception and observation, and great keenness in these directions."

"His mind was not satisfied to hold either facts or generalizations without explanation, and his search for explanation extended to the broadest generalizations and most fundamental concepts ; it was his habit to refer all minor problems to the broadest possible categories."

"His mentality was most notable for its capacity to arrive at proper conclusions speedily without burdensome analysis of detail."

"A man of broad and comprehensive mental grasp ; he seemed to be trying to get at the deeper meanings of things."

"He was unusually gifted, and though coming from the plough showed a natural aptitude for philosophizing, viz., seeing everything in its connection with the whole."

"His

best faculty was that of generalizing in terms of his own observations or experiences, *i. e.*, beginning with his own observations as interpretative nuclei he arranged and assembled facts, gathered by others as well as himself, in systems at once definite and comprehensive." . . . "This was not only his leading faculty, but one in which he excelled all others. While by no means strong in mathematics, he had excellent command of the field of thought commonly considered abstract, as shown in his constructive discussions of logic ; yet even here he was led, by faculty as well as by deliberate purpose, to pursue interpretative methods, or the methods of natural science rather than metaphysical methods — so that here too, the ruling faculty was dominant. Not technically trained in music, he was in quite exceptional degree susceptible to music, as well as the drama, poetry, and painting ; and his scientific analysis of music and other fine arts was at once acute and masterly — the quality of the analysis partaking of the natural history method, and again expressing his power of generalizing under the guidance of his own sense impressions."

"His clear view of the relations of concrete things made him a really good administrator and organizer of institutions ; like Bache for the Coast Survey and Baird for the National Museum or Fish Commission." "He certainly was a man of suggestion, thus bringing workers to him over whom he exerted a marked influence. He was a man qualified to rule and direct."

"He was on the whole a good judge of character and was remarkably successful in getting the best out of every one with whom he had relations." "He always gave evidence of unusual breadth of mental vision. He had a broad way of looking at things. He had also rather unusual felicity of expression ; although he did not speak rapidly, his ideas were always clothed in very appropriate and expressive language."

"There are few men to whom the scholarship of this country owes more ; but I believe it to be a debt less for his personal contributions to ethnology than for what he enabled, and one may fairly say compelled, other men to do."

"He enjoyed 'blazing a trail' in science, but the trail made and open, he usually left to others the task of permanent road-building. Thus his work in geology brought into sharp distinctiveness certain features of geologic mechanics in

erosion, etc., which are at the root of the branch of geology called geomorphology, which has of late formed a school. The facts have long been known, but their relations had never been appreciated until he turned the searchlight on them. His great gift of sympathy brought him near the Indian, and he was almost the first to appreciate Indian philosophy of life and to be able to put himself at the Indian point of view, sympathetically." "Major Powell's salient characteristics were courage, sympathy, insight into relations of things."

"My feeling is that his greatness was rather in his personality; his honesty, his continuity, his invincible determination (joined with a very reasonable amount of tact for such a character) which chanced to be applied to this scientific field." "Whenever he decided upon any course of action, he carried it out with extreme force and energy, and without much regard to consequences."

"I should think that unflinching courage was Powell's leading characteristic, whether it were to descend into the Grand Cañon, or to say something which he might have thought unpopular; his devotion to the truth distinguishing him from most other public men."

"I know of no one who has so successfully, so wisely and so permanently organized the forces of national scholarship in a specific field as Major Powell."

"He had rare power of mental concentration, being able to restrict his attention to a selected subject for long periods. If interrupted (and he suffered himself to be interrupted freely) he would revert instantly to his subject of thought, and appeared to resume it without effort at the point of interruption. When fatigued he was able to refresh himself at almost any hour."

"He was valiant, swift in action, keen in discerning."

"I think fearlessness—intellectual and physical—was the trait which I most admired in him. He was serious, and endowed with good generalizing powers. His use of words was very definite and forceful—never subtle or of fine flower. A fine, strong, rugged, just, sincere man—that is the impression he made on me when I first met him."

"He wrote much in verse, very little of which has been printed. His tendency was strongly imaginative, notwithstanding that he was addicted to scientific pursuits during so many years."

It is clear to any one who reads these passages attentively that the power which chiefly characterized Powell's intellectual ability was that of seeing analogies and making comparisons, of coupling observations and thoughts which to most people seemed not at all related to each other until by him placed in a certain light. With him the conception of the concrete outweighed thought in the purely abstract (the function, chiefly, of the frontal association areas). The rather superior, though not extraordinary, development of the area in closest proximity to the auditory field can safely be correlated with his good appreciation of music, not only of European composition but of Indians as well, as shown in his masterly analyses of Indian songs and melodies. As Dr McGee has stated, Major Powell was a 'potential musician' if not a trained one, and this statement is supported collaterally by the fact that his daughter and other blood-relations are highly accomplished musicians.

Keeness of observation, therefore, with a superior ability of forming concrete concepts, profound insight into the inter-relations of what he saw or heard, great capacity for associating and generalizing his thoughts and giving them expression in words; all these, with the musical and poetical faculties characterized Major Powell's mind. And since these mental qualities, taken collectively, are known to reside, without doubt, in this great "posterior association area" of Flechsig, which we have seen so extraordinarily developed in this brain (particularly upon the right side), we may feel justified in saying that here we have found a somatic expression of mental ability of a pronounced kind in the anatomical appearances of a distinguished man's brain.

Major Powell, geologist, ethnologist, explorer, philosopher, and soldier, was endowed with a superior brain, and, what is more, he used it well.

In conclusion I wish to express my hearty thanks to Dr W J McGee, to Dr D. S. Lamb, and to the many friends of Major Powell who have assisted me in this study.

ABBREVIATIONS USED IN THE ILLUSTRATIONS

		FISSURES	
<i>ADOC</i>	Adoccipital	<i>BS</i>	Basisylvian
<i>AMYG</i>	Amygdaline (post-rhinal)	<i>C</i>	Central
		<i>CL</i>	Callosal

<i>CLC</i>	Calcarine	<i>PC</i>	Postcentral
<i>CLT</i>	Collateral	<i>PCLC</i>	Postcalcarine
<i>CNL</i>	Cuneal	<i>PML</i>	Paramesal
<i>DG</i>	Diagonal	<i>POCN</i>	Postcuneal
<i>EOP</i>	Exoccipital	<i>PRC</i>	Precentral
<i>EPS</i>	Episylvian	<i>PRCN</i>	Precuneal
<i>FMG</i>	Frontomarginal	<i>PRS</i>	Presylvian
<i>HMP</i>	Hippocampal	<i>PTL</i>	Parietal
<i>HPS</i>	Hyposylvian	<i>RDT</i>	Radiate
<i>IFL</i>	Inflected	<i>RST</i>	Rostral
<i>IPARC</i>	Intraparacentral	<i>S</i>	Sylvian
<i>IPRCN</i>	Intraprecuneal	<i>SBC</i>	Subcentral
<i>ITML</i>	Intermedial	<i>SBFR</i>	Subfrontal
<i>MCL</i>	Medicallousal	<i>SBIRST</i>	Subrostral
<i>MFR</i>	Medifrontal	<i>SBS</i>	Subsylvian
<i>MTMP</i>	Meditemporal	<i>SBTMP</i>	Subtemporal
<i>OC</i>	Occipital	<i>SPC</i>	Supercentral
<i>OCLC</i>	Occipito-calcarine stem	<i>SPCL</i>	Supercallosal
<i>OLF</i>	Olfactory	<i>SPFR</i>	Superfrontal
<i>ORB</i>	Orbital	<i>SPTMP</i>	Supertemporal
<i>ORBFR</i>	Orbitofrontal	<i>TRORB</i>	Transorbital
<i>PARC</i>	Paracentral	<i>TPRC</i>	Transprecentral
(<i>CPH.L.</i> Cephalic limb)		<i>TRPC</i>	Transpostcentral
(<i>CD.L.</i> Caudal limb)		<i>TRPTL</i>	Transparietal
<i>PAROC</i>	Paroccipital		

GYRES

<i>ANG. G.</i>	Angular G.	<i>PC. G.</i>	Postcentral G.
<i>CL. G.</i>	Callosal G.	<i>PO. ORB. G.</i>	Postorbital G.
<i>HMP. G.</i>	Hippocampal G.	<i>PRC. G.</i>	Precentral G.
<i>INS.</i>	Insula	<i>PR. ORB. G.</i>	Preorbital G.
<i>PR. INS. G.</i>	Preinsular gyres	<i>PTL. G.</i>	Parietal G.
<i>PO. INS. G.</i>	Postinsular gyres	<i>PPTL. G.</i>	Postparietal G.
<i>MARG. G.</i>	Marginal G.	<i>SBCLC. G.</i>	Subcalcarine G.
<i>MFR. G.</i>	Medifrontal G.	<i>SBCLT. G.</i>	Subcollateral G.
<i>MORB. G.</i>	Mesorbital G.	<i>SBFR. G.</i>	Subfrontal G.
<i>MTMP. G.</i>	Meditemporal G.	<i>SBTMP. C.</i>	Subtemporal G.
<i>PARC. G.</i>	Paracentral G.	<i>SPFR. G.</i>	Superfrontal G.
<i>PAROC. G.</i>	Paroccipital G.	<i>SPTMP. G.</i>	Supertemporal G.

HOW THE PAWNEE CAPTURED THE MEDICINE ARROWS

By GEORGE A. DORSE

INTRODUCTION

It is commonly known that there exists in the tribes of Indians an object or group of objects of veneration and known as the tribal "medicine." The tribal medicine is an image known as the *medicine bundle*. Among the Omaha it is a large shell; among the Arapaho it is four arrows, one painted red, another yellow, and the fourth black. These are to be in the keeping of a member of the tribe, and in fact the hereditary keeper of the Cheyenne medicine has only three of the original four arrows — the black one being missing. Neither by the Cheyenne nor by the Pawnee is it known that the entire medicine of the Cheyenne was captured by the Pawnee about sixty years ago. The story is well known among the Pawnee, and I present here the account of the fight which resulted so disastrously for the Cheyenne. Accounts are given as recorded from the old Cheyenne, while there is considerable difference in the accounts in the two stories, it will be seen that they differ in an important particular, viz., the number of arrows which were placed upon the "Morning-Star bundle."

In addition to the general historical interest, the story gives insight into certain fundamental traits of character of the two tribes involved.

FIRST VERSION

Many, many years ago, when the Pawnee village upon the Loup river in Nebraska, the Cheyenne were west on a hunt.

When they came to the Platte river they saw

the hills. They made their camp upon the Platte river. Then the men got upon their ponies and they went and attacked the buffalo. After they had attacked the buffalo and the people had all scattered out, each man running after his buffalo, the hunters were attacked by the Cheyenne, Arapaho, and some other tribes.

Finally, the Pawnee got together by a general alarm that was given. The Pawnee were being driven out of their villiage. The head-chief's name at this time was Big-Eagle, and he was the keeper of the Morning-Star bundle.

He had not gone out to kill buffalo, but had stayed at home. When he saw that the people were being driven out of the village, he caught a little spotted pony that he had, then went into his tipi and took therefrom his head-dress, with an eagle feather on it. This he put upon his head, placed strings of wampum beads around his neck, and placed two medals upon his breast. Then he put on his scalp leggings and black moccasins. He then went out to the battle-field.

When he got there, he saw that his people had given way. He rode up and stopped them, and he saw one man coming behind all the others, on foot. Big-Eagle rode up, checked the enemy, put the man upon the pony behind him, took him out, placed him in a thicket of reeds, and went back to the battle-ground. He passed between the two lines of battle.

In the village was another man, who was sickly, and who asked his relatives to take him out to the battle-field, saying he preferred to fight and get killed in battle rather than to die through sickness. So his friends placed him upon a blanket, took him out to the battle-ground, and placed him in front of his own people's battle-line, and they gave him a bow and spread his arrows out in front of him.

The Cheyenne now made a determined effort and tried to capture this man, but they could not. Among the Cheyenne was a medicine-man and chief, who, it seems, came up along the battle-line and asked the Cheyenne warriors if anybody had taken the man sitting in front of the battle-line. He was told that nobody had touched him. The Cheyenne warrior rode up, having only the wonderful spear, and as he approached the sick man who was

sitting in front, he reached out with his spear the body of the sick man ; but it seems that he was far enough to push the spear into the man ; then he reached out and grasped the spear, to snatch it out of the hands of the Cheyenne.

A coyote hide was wrapped upon this spear, and of the spear was a bundle, and in this bundle were medicine-arrows of the Cheyenne.

The sick man, on examining the spear, saw something sacred. He turned back to his people ; he had something there that he thought was sacred to the Cheyenne ; that they must try to get it away from him, and one of the sick man's relatives took up the spear, and all the time fighting in front. So the Cheyenne won the arrows at this battle.

After the battle was over, Big-Eagle was given the black and the red arrow, while the yellow arrow were given to another man, who had another arrow.

Every year after that the Cheyenne came and would ask for Spotted-Horse, but they refused, for Big-Eagle had done most of the fighting. Then the Cheyenne invited the Pawnee to visit them, and they came to bring their arrows with them. But Big-Eagle was sharp for them, and he carried only the red and black one, which he thought meant more than the yellow one put together.

And it seems that he was right, for when he was in the Cheyenne country the Cheyenne had gathered all the tribes, and when they got into the circle they took the arrows. Big-Eagle took out the red arrow and the black one, and suddenly a man jumped up from the circle, took the arrow, and escaped with it.

Many ponies were given to the Pawnee, and they took them home. One of the arrows, the black one, was kept up, and it is still kept in the Morning-Star. The red and the yellow arrow were captured by the Pawnee afterward.

SECOND VERSION

Long ago, when the Skidi were on the hunt they were attacked by Cheyenne warriors. The Skidi were much frightened, for there were many men on the Cheyenne side ; but the Skidi men went out to the battle-field. They found out that they had as many men as the Cheyenne. The battle was hard fought. Neither the Cheyenne nor the Skidi gave way. The battle went on. The Skidi women were heard to give their war-cry to give courage to the young men who for the first time had joined in battle.

A man was sitting in a tipi who had been sick for many months, and he was covered with sores, so that he was not able to join in the battle. These sores had bothered him for many months. He sat there, thinking, and he made up his mind that it would be better for him to be killed in battle than to be thus disabled and packed around in their journeys. So the sick man sent for his brothers and uncles and told them of what he intended to do. He took off his robe and showed the sores to his relatives, telling them that he had had those sores for many months and that the medicines he was taking from the medicine-men did not seem to help him. The next thing for him to do, he thought, was to have these men place him upon a robe, with a man at each corner of the robe, and to lift him and carry him to the battle, placing him about fifteen feet from the line of the Skidi, so that he would be exposed to the arrows and gunshots from the enemy. Finally, his brothers were to place in front of him many arrows, giving him the strongest bow that they could find.

The relatives of the sick man, seeing his sores, thought that the man was right in wanting to be killed in preference to being laid up gradually to die. So these men placed the sick man upon a robe ; they lifted him and carried him to the line of battle and placed him about fifteen feet from the Skidi line. This man's condition was such that he could not stand up. His relatives gave him a bow and spread many arrows in front of him, so that he need not walk for them.

The Cheyenne seemed to be inclined to make an attack on the Skidi line about this time. All the men on the Cheyenne side

gave the war-cry and made a rush at the Skidi side, so that the Skidi ran, leaving the sick man behind. In the meantime, the sick man had gathered his arrows and had shot them so swiftly at the Cheyenne that they had not touched him.

While the Skidi were running toward the village they met their chief, who was known as "Big-Eagle," and among the Cheyenne was known as "Spotted-Horse." Big-Eagle turned his men and led them back, and when the Cheyenne saw the Skidi coming back at them, they ran. The Skidi again took their places on the north side, the sick man still in front, and the Cheyenne on the south side. Big-Eagle ran his pony between the two lines, riding back and forth, now and then chasing back a Cheyenne who had dared to come out from their line. Big-Eagle had killed several Cheyenne and had counted coup on them. The Cheyenne saw that Big-Eagle was a tall man, that there was no fear in him and that he was a wonderful man. His hair was roached, he had a prominent nose, wore scalp leggings, black moccasins, and a red shirt made of strouding, and he had wampum about his neck and a Government medal upon his breast; he also had many ear-bobs in his ears. The only thing upon his head was an eagle-feather. The Cheyenne knew from the appearance of Big-Eagle that he must be a chief. Big-Eagle rode a spotted pony. The spotted pony was a small one, but its body was quite long. As Big-Eagle seemed to do all the fighting alone, it seems that the Cheyenne chief had given his word that whosoever should strike, kill, and scalp Big-Eagle should be the head-chief of all the Cheyenne. So all the Cheyenne gave the war-whoop, encouraging one another to try to get the honor of having hit Big-Eagle. As they fought now the Skidi were on the north side in a row extending from east to west, and the Cheyenne were on the south side extending from east to west, the sick man sitting in front of the west end of the Skidi line, so that Big-Eagle really could not protect the sick man, for when he was on the east end, some of the Cheyenne would attempt to strike the sick man.

While Big-Eagle was on the east end, one of the Cheyenne came out, dressed differently from the others, and carried a spear. The spear was made of a long stick with an iron point at one end. The stick was painted with white clay, and a small bundle with a

coyote hide cover was tied close to the iron point. It seems that this Cheyenne, when he came out from the line, asked if the sick man had been struck. Everybody on the Cheyenne side said, "Yes, he has been struck," for it seems that the Cheyenne, knowing that this man carried the Cheyenne spear with the wonderful arrows on it, did not want him to attack the sick man, for fear he would lose the spear and the arrows. Nevertheless, the Cheyenne with the spear ran his pony toward the sick man, and the sick man, it seems, was not noticing, but the people on his side yelled for him to look out, and when he looked up, the Cheyenne was close upon him, holding out the spear to touch him. The sick man reached out and caught the spear, and as the horse turned around to go back to the Cheyenne line, the Cheyenne could not very well pull the spear away from the sick man. The Cheyenne had either to fall from his pony and be killed or give up the spear, so the sick man got the spear. The sick man turned around to the Skidi and said, "This spear must be a wonderful spear; come and get it, some of you." So about this time Big-Eagle went by the sick man and took the spear, which had been stuck in the ground by the sick man. Big-Eagle handed the spear to one of his relatives for him to take home. Big-Eagle returned to the battle.

The Cheyenne now fought more furiously, trying to capture their spear again, but the Skidi fought more fiercely, killing many Cheyenne. When Big-Eagle went back and rode down between the two lines, the Cheyenne all shooting at him, one of the Cheyenne came out from the line and followed Big-Eagle down toward the east end of the battle-lines, holding out his stick, trying to touch him—all this time Big-Eagle watching. When Big-Eagle thought he had the Cheyenne far from the Cheyenne line, he wheeled his pony around and struck out after the Cheyenne and ran him toward the Cheyenne line. Big-Eagle struck the Cheyenne three or four times with his quirt. Big-Eagle then turned back and went behind the Skidi, talking to them and telling them that it was time that they should attack the Cheyenne and drive them from their village. The Cheyenne in the meantime were made glad when this Cheyenne was run into the Cheyenne line, for this man told the Cheyenne that he had speared Spotted-Horse

(Big-Eagle) in the thigh and had struck him and counted coup. This seems to have been the aim of the Cheyenne — for somebody to count coup on Big-Eagle. So when the Skidi made a rush at the Cheyenne, the Cheyenne gave way ; so the Skidi ran the Cheyenne away, and after they had run them very far away the Skidi turned back and went home.

Big-Eagle, on reaching home, found the spear in his house. It consisted of a long wooden shaft, wrapped with strips of otter hide, with an iron head at one end, while close to the head and wrapped about the shaft was a bundle of arrows in a coyote hide. Big-Eagle unwrapped the arrows, and as he did so one of the relatives of the sick man came in and demanded the spear. Big-Eagle told the party that he was willing to let them have the spear and one arrow. The man was satisfied with the spear and one arrow (though which one of the colored arrows it was I don't know). Big-Eagle, being keeper of the Morning-Star bundle, and as a big coyote hide is used for the cover of the Morning-Star arrows, thought that these arrows and the coyote hide would be the thing to put on the Morning-Star bundle. So Big-Eagle sent for the priests, who came to his lodge, took the Morning-Star bundle down, opened the bundle, and took from it sweet-grass and buffalo fat. Mixing these two, the priests made a fire at the southwest part of the tipi and placed the sweet-grass and fat upon the hot coals. The sacred things that were contained in the bundle were passed over the smoke and placed back in the bundle, and this coyote hide and the arrows were passed over the smoke, giving them the right to remain with the things of the Morning-Star bundle. The smoke ceremony was then gone through with the pipe, and after the ashes had been emptied out the bundle was tied up again. So the Cheyenne arrows were placed in the Morning-Star bundle.

There the arrows were kept until the next year, when the Cheyenne came back to the Skidi and said that they were messengers from the chief and priests of the Cheyenne, that they wanted to invite the Skidi warriors to the Cheyenne village, and that the Skidi should take the wonderful arrows with them. Big-Eagle doubted this very much. The Cheyenne returned to their country.

The Pawnee did not go, for they were afraid that the Cheyenne were trying to get the arrows back by strategy.

The following year, while the Skidi were upon a hunt, the sick man's relatives did not go, for the sick man was very sick. These people were the ones who received one arrow from Big-Eagle. The Cheyenne attacked the village where the sick man was, so the people fled to the timber. They left the sick man at home; the sick man was killed. The arrow was seen upon the sacred bundle, for these people had not put the arrow in the bundle as the Morning-Star people had done. Then the Cheyenne pulled the arrow out from the bundle and went away. When the people returned they found the sick man killed, the bundle there, and the arrow gone. The people were sorry that the arrow was gone, but they were glad that the bundle was there and that the Cheyenne had not taken it. These people then brought their ponies, packed up, and left the village, following up the people on the hunt.

When they got to the village, they told the people that the sick man had been killed by the Cheyenne, and that the arrow had also been captured; that it was on top of their bundle, but that the bundle was left. The people went on hunting, and when they went back into the village the Cheyenne visited them again. The Cheyenne talked nicely to the Skidi, telling them that the chief and the prophet had promised them a big reward if they would bring their arrows back, and if they could not bring all of them back, to bring one of them, and they would give many ponies for them.

So Big-Eagle made a bundle, and in this bundle he put one arrow and sent for his braves, in whose trust he put the arrow, telling them to take his place and go to the Cheyenne. The Cheyenne were on horses, while the Skidi were afoot. The Cheyenne told the Skidi that they would give them many horses when they should get to their homes and would turn the horses over to them. For many days they traveled together, the Cheyenne taking the lead on horseback, and the Skidi following. Every night the Skidi were on their guard, watching and expecting the Cheyenne to attack them at any time. The Cheyenne did not show any treachery on their part, so that the Skidi finally gave up their watching. One of the Cheyenne rode up alongside of the Skidi who carried the

bundle that had the arrow in it. Now, this bundle contained only one arrow, for Big-Eagle, expecting treachery on the part of the Cheyenne, had put only one arrow in the bundle. So the Cheyenne who rode alongside the man carrying the bundle with the arrow in it would once in a while get off from his pony and let the Skidi ride the pony while the Cheyenne carried the bundle. Several times the Cheyenne did this, so that the Skidi was entirely put off his guard. One time as they were traveling along, the Cheyenne offered to carry the bundle for the Skidi. The Skidi, being tired, thought it would be best for the Cheyenne to carry the bundle upon his pony. So the Skidi gave up the bundle. The Cheyenne carried the bundle all right and returned it to the Skidi when they stopped to eat. It seems that the Cheyenne had planned that in the afternoon the Cheyenne should again ask the Skidi that he might carry his bundle, when all the Cheyenne would be ready to whip up their ponies and run away from the Skidi, as soon as they should see that the Cheyenne had the bundle in his possession. As they were traveling, the Cheyenne rode up to the Skidi and asked him to let him carry the bundle. The Skidi gave up the bundle, and by a certain sign from the man who carried the bundle, the Cheyenne all whipped up their ponies, and, turning around, told the Skidi by signs that there were some buffalo over the hills that they were going to kill. When the Skidi climbed up on the hill they saw no buffalo, but they saw the Cheyenne at a long distance, whipping up their horses. The Skidi stopped and looked at one another, then turned back and went away.

It seems that when the Cheyenne reached their village they found only one arrow that was of any importance to them. So the chief and the prophet sent another party of warriors to invite Spotted-Horse and his people to their country, claiming that the party who had been there were of a low class of Cheyenne who were not representatives of the chief and the prophet. So these Cheyenne went to the Skidi village and gave many presents of fine robes, head-dresses, and other things to Big-Eagle as gifts from the Cheyenne chief and the prophet. The Cheyenne particularly requested Big-Eagle to go with them, as they wanted the arrows very badly and they wanted to have the ceremony, saying if Big-Eagle

would bring the arrows out there the chief and the prophet would give them many ponies and that they would let him witness the ceremony. Big-Eagle sent for his braves, and he told them of what the Cheyenne had said. One of the braves spoke and said: "Big-Eagle, you are a man, a brave man, the Skidi people all know it, the Cheyenne know you are a brave man; let not the Cheyenne people think that Big-Eagle is a coward, that you do not want to go down to the Cheyenne country, but show to the Cheyenne people that Big-Eagle is a warrior, a brave, and a chief by going down there, and, if necessary, fight them down there and die there in their village, a brave man." Big-Eagle said: "It is well that you have spoken; go and gather all my great warriors and tell them that we are to go and visit the Cheyenne, that the Cheyenne arrows are to be returned to the Cheyenne." So the man went and notified all the brave men of the Skidi tribe. So all the brave men gathered up their bows and arrows and had everything ready to join Big-Eagle to go to the Cheyenne country.

In the meantime Big-Eagle had the old priests meet in his lodge to have a ceremony of offering sacrifices, whether a scalp, whether a feather, or anything that belonged to the enemy. So Big-Eagle told the priests to offer a red arrow as an offering to the gods, for now he was to return the red arrow to the Cheyenne; the black arrow he would keep in the Morning-Star bundle. So the old man offered the red pipe to the gods in the heavens, so that it [the red arrow] was just as good as being thrown away [*i. e.*, sacrificed]. This was also done to take bad luck to the Cheyenne, the enemy of the Skidi. Now the black arrow was put back in the bundle and Big-Eagle took only the red arrow this time.

Big-Eagle then told the Cheyenne he was going with them. The Cheyenne was glad. This time Big-Eagle had many warriors, and all were on ponies. Big-Eagle was careful to have guards placed out each night, so that if the Cheyenne should try to take advantage of them they would know it. The Cheyenne never tried to bother the Skidi on the way. When the party of Skidi and Cheyenne approached the Cheyenne village, the Cheyenne went into the camp and notified the chief of warriors of the arrival of the Pawnee. A war-party was got up to meet Big-Eagle. The war-party went

out and met Big-Eagle, receiving him and his people, giving sticks to Big-Eagle, the sticks representing horses. Every time a stick was given to Big-Eagle he would throw it away. When the Cheyenne asked him what he did it for, Big-Eagle said: "If the Cheyenne want to honor me, let them put the lariat [reata] upon their ponies, and let them lead their ponies to me and put the lariat in my hand; then I will take it, then I will know that the Cheyenne are giving me a pony; when the Cheyenne give me a stick, he says, 'I give you a pony,' but I do not know the Cheyenne, I do not see the pony; the pony might be a wild one, it is a gift that I do not care to accept; so I throw these sticks away."

When the Skidi were taken into the Cheyenne village the Cheyenne had built a large tipi in which the Skidi were told to make their home; but as there was much excitement among the Cheyenne, who wished to see the arrows and to hear Big-Eagle speak, they hurried the prophet and the chief to hold a council with Big-Eagle and his people. The chief who had given the order that he who should strike Big-Eagle should be head-chief was now entertaining Big-Eagle. This Cheyenne chief told Big-Eagle that there was a certain young man in this place as chief, and he told Big-Eagle that the young man now lived in a tipi by itself, away from the tipis of the Cheyenne.

It was now agreed between Big-Eagle and the Cheyenne chief to go over to the Cheyenne warriors, and for the Skidi to be on the south side of the tipi and the Cheyenne to be on the north side of the tipi, with Big-Eagle and the Cheyenne chief sitting together in the west with the bundle containing the arrows exposed in front of them. The Cheyenne were anxious first to hear from Big-Eagle whether the young man who was now their head-chief did strike him and lance him with a spear. Big-Eagle then told the Cheyenne that if he should say anything he wanted the young man who was now head-chief to come and be present, so he could hear what he had to say. Big-Eagle told the Cheyenne chief who was sitting by him to send for the young man. So the Cheyenne chief sent for the young man, who was now head-chief, and when he came he had a robe about his body and all over his head, so that only one of his eyes could be seen. This young man was given a seat in

front of all the Cheyenne. The Cheyenne chief who was sitting by Big-Eagle spoke and said, "Chief, now tell us how you lanced Big-Eagle and struck him ; Big-Eagle is a brave man ; he is here with us ; he is also the chief, a great chief ; he will tell us straight." So the Cheyenne chief spoke and said, " As Big-Eagle was riding between the two lines of battle I rode my pony out and ran after him, until I caught up to him ; then I took my spear and lanced him on the rump, and I pulled the lance out and struck him ; then you all saw me running back into our line, Big-Eagle running after me ; that is all." This was all told to Big-Eagle.

The Cheyenne now looked to Big-Eagle, for him to speak. Big-Eagle arose and walked up to the Cheyenne young chief and took hold of the robe he had about his head and threw it off from his head. Big Eagle said : " I am a man and when I talk to men I do not want to talk to men dressed like a woman, who hides under her robes." The Cheyenne, seeing all this performance, made a hissing, whistling noise at their chief, for they knew that the Cheyenne chief must have lied. Big-Eagle made a motion to the Cheyenne and told them in sign language that he was a man (the sign was given by extending the first finger downward, the thumb and other fingers clenched, and the hand placed next to the penis signifying that he had a penis too), saying, " All of you are men, and brave men, I hope ; now let every one of you open your eyes and look at my rump, and see if you can see any scar on it. If there is any scar upon my rump then you may know that he told the truth ; if there is no scar upon my rump you may know that the young man has lied."

Big-Eagle was dressed as he was dressed in battle, with buckskin leggings, with scalps hanging upon the sides, and the red strouding shirt ; he wore also the wampum beads, and the feather in his hair. As he was standing before the Skidi and Cheyenne, he slipped the breech-cloth from his belt in front and took it off behind. He told the Cheyenne to look well, and if any thought there were scars upon his rump, to come and feel of him. None of the Cheyenne spoke, nor rose to feel of his rump, for they were now hissing at their chief ; they knew that he had lied. Big-Eagle put his breech-cloth on and told them that the young man had

attacked him but that he never came close pony. He told them if he had touched him to their line and would have killed him that as he had struck the young man twice man had cried, and then he had let him go.

The Cheyenne ran the young chief away down his tipi, and they had no more use chief, who was sitting by Big-Eagle, then Eagle is a great chief and he is a great warrior. We know that Big-Eagle fought; we were afraid of him; Big-Eagle has spoken straight; he has stood up before us a man he was not ashamed to stand naked before he said was true; we saw no scar; the young man by moving away from us like a dog; he said the Cheyenne will select a new chief; Big-Eagle has the best horse I have."

The Cheyenne sat down. Big-Eagle said: "You are a chief; you give me a pony, you must give me words, but bring the pony before me so that I can take it with my hand, and lead it to some of these tipis." "It is out."

The Cheyenne here and there arose and walked up to Big-Eagle and gave him sticks as they gave him the sticks he threw the sticks. The Cheyenne who now saw that he would not get their ponies into the tipi, jumped off from their ponies to Big-Eagle.

Now the chief said, "Big-Eagle, it is not time for arrows." Big-Eagle said: "It is not time for ponies; I have received few ponies, but the Cheyenne begged Big-Eagle so hard that he would show them one arrow."

When the time came for the Cheyenne of the Cheyenne arose and, addressing the young man: "Give me your bows and arrows and your knives to

to see something that we look upon as sacred." Big-Eagle stood up and said, "When Tiráwa first created man he gave him the bow and arrows to hold on to, wherever he is; I am not a woman that you should tell me to lay my bow and arrows to one side; I am a warrior, and a brave one, and I hold on to my bow and arrows; they are mine, not yours; you are not my chief that you should command me to lay these things to one side; you people are tricky, you have showed it in the past, so that I cannot trust you. If I lay my bow and arrows aside, what will you do? You will try to kill my warriors and try to kill me if I am not armed and have no bow and arrows to defend myself. When I show you your arrow, if you show any treachery, if you kill any of my warriors, this chief whom I am sitting by shall die by the hand of Big-Eagle."

The Cheyenne grunted. They were afraid of him. So Big-Eagle unwrapped the arrow and spread the robe in front of the Cheyenne and placed the red arrow upon the robe. When Big-Eagle walked back toward his seat, with his back toward the arrow, a young Cheyenne, stark naked, jumped from the crowd of the Cheyenne, ran where the arrow was lying, picked it up, and ran away with it. It was done so quickly that the Skidi and Big-Eagle hardly knew what had happened.

Big-Eagle was angry. He told the Cheyenne that he could not give up the other arrow, for they had played a trick on him, as he had expected them to do. The Cheyenne acted as if they were going out to hunt the man who took the arrow, but really they were not looking for him.

The Cheyenne, thinking that they could get the other arrow by getting Big-Eagle drunk, then brought a little whiskey which the Cheyenne had captured from some emigrants and placed it before Big-Eagle and the Cheyenne chief. Big-Eagle drank of the whiskey; so did the Cheyenne chief. Big-Eagle called the Cheyenne names, called them cowards and women for running away with the arrow. The Cheyenne tried to fight him, and when they tried to fight him the Skidi warriors were right there to help; but Big-Eagle jumped upon the head-chief of the Cheyenne and pounded him. The Skidi expected to have a fight that night, but there was no fight.

The next day the Cheyenne chief invited Big-Eagle to eat with him. The Cheyenne also invited several of his brave men. While they were eating, the Cheyenne chief spoke, and said: "My brother, Spotted-Horse (Big-Eagle), your coming here has made me great; I am a chief again; I am glad to have been bruised upon my body and upon my head by the hand of a great chief; the Cheyenne cannot hiss at me and make fun of me, for they know what kind of a man you are." The braves of the Cheyenne spoke, and said: "What the chief said is true; he is now a great chief."

Big-Eagle told the Cheyenne that he was not going to give up the other arrow, for they had not treated him right, and he wanted the Cheyenne to bring the ponies to him, for he was going to return to his country. The Cheyenne brought many ponies to Big-Eagle, and he at once started for his country.

After he had been gone two or three days, Big-Eagle found out that some of his warriors had stayed behind. When Big-Eagle returned to his village and had been home for four days it was told to him that the men who stayed behind were coming with many ponies; they were men who had been with Big-Eagle, and although Big-Eagle and the Cheyenne chief had made peace, the Pawnee warriors had remained behind and had captured many Cheyenne ponies.

The black arrow was not taken with him on this trip and it was always kept in the Morning-Star bundle. The arrow is still in this bundle and the arrow may be seen only early in the spring, when the thunder first sounds, for at this time the bundle may be opened. This bundle is at this time in the keeping of Tchupirikata (White-Star), daughter of Big-Eagle.

NOTES ON ORIENTAL BABIES

By EDITH ELMER WOOD

During a residence of nearly two years in China, Japan, and Korea, the writer made some study of the size and growth of native children under six years of age. She weighed and measured a number of those who figure in the accompanying tables, and the rest were weighed and measured at her request by Dr Mary H. Fulton of Canton, Dr Edgerton H. Hart of Wuhu, and Dr Mary A. Sukanuma of Nagasaki, to whom she now takes pleasure in acknowledging her obligation.

Owing to the superstitious fears of the parents, only ten Korean children were measured — from six months to five years of age — and none was weighed. The measurements, so far as they go, indicate larger children and less variation from the average than among either Chinese or Japanese. The bodily proportions are remarkably like those of occidental children. Adult Koreans are of decidedly larger stature than Japanese or southern Chinese, but it is impossible to speak more precisely, as statistics concerning them are entirely lacking.

Comparison with occidental children is rendered difficult by the paucity of reliable data for the ages between birth and six years. School children, both in Europe and America, have been weighed and measured by thousands, but below the school age they have been studied only by twos and threes, or at most by tens and twenties. For height and weight the writer referred to the Italian averages of Pagliani (three years and over), the Belgian of Quetelet, the German of Beneke and Camerer, the English of the Anthropometric Committee (fragmentary under four years), the American of Peck (four years and over), the individual records made by Dr Hall and Dr Shinn, and to an unpublished record of her own three sons. For height alone she had the figures of d'Espine and Picot in France, of Russow in Russia, of Daffner, Oppenheim, and Von Lange in Germany, and of Liharžik in Austria. For weight alone,

Fleischmann's and Hähner's. For the other bodily proportions she had at her disposal only the record of her own boys, the chest, arm, and foot measurements of Quetelet, the chest and skull measurements of Daffner, and a few scattering figures from Galton's report (English Anthropometric Committee) and from Hall.

Comparison with this body of statistics indicates, as might have been expected, that Japanese babies under two years average smaller than European or American. A little later they seem to have a period of more rapid growth; for the fifteen Japanese children of two years and over, with an average age of four years and four months, have an average height of 94.1 centimeters, which lifts them above the French, Italian, and Belgian children of like age and puts them about on a level with the German.

The children in the Chinese table under two years of age average about as much taller than the Japanese as one would expect from the relative height of the adults. But between two and four years the Chinese are slightly smaller, and between four and six very markedly smaller than the Japanese. The Chinese average falls so far behind any European standard for the ages of three, four, and five as to suggest an arrest of growth following weaning, when the child for the first time shares the insufficient nourishment of the family. The age of weaning is extremely late, two years being about the average.

Either the undersized Chinese children die off or a period of very rapid growth occurs later, for the adult southern Chinese is taller than the Japanese and only slightly shorter than the Italian or the southern French. Compare in this connection Ball's measurements of 1000 male prisoners in the Hong Kong jail (average height 1620 millimeters) and 100 female prisoners (average height 1510 millimeters) with Bälz's measurements of 2500 Japanese (average height of men 1585 millimeters and of women 1465).

In weight the Chinese children appear to make a better showing than in height; but it must be remembered that all the heights recorded are of Cantonese children, while thirteen out of the eighteen weights are of Wuhu children, who are probably larger in every way, as the adults undoubtedly are. Physical, temperamental, and linguistic differences between southern, central, and

northern Chinese are fully as marked as between the different Aryan races of Europe.

Bälz found that the adult Japanese is considerably heavier, relatively to his height, than the adult European. This seems to be true of the children, but in a less marked degree. Taking the fourteen who were weighed, whose average age is three years and ten months, a comparison of their combined weights and heights shows a trifle over 15.7 grams to the millimeter. Beneke's German children of four years (German adults are, according to Ranke, among the heaviest of Europeans proportionately to their height) show 15.2 grams to the millimeter, and Quetelet's Belgian children 15.1, while Pagliani's Italian children are proportionately lighter (14.5 grams).

Bälz confirms the common observation that adult Japanese have a larger head, longer spine, and shorter arms and legs, in proportion, than any European race. This does not seem to be true of the children except as to arms. Skull and spine measurements actually average less in proportion than those of the European and American children at the writer's disposal.

The bodily proportions of adult Chinese are largely conjectural, the only available data on the subject being measurements of twenty Chefoo men made by the Austrian scientific expedition on the *Novara* and embodied in Dr Weisbach's report. It is difficult to see on what ground Ranke and others assume that Chinese proportions are the same as Japanese. That they have the general characteristics of large head, long spine, and short limbs peculiar to races of ancient civilization is very probable; but the writer is convinced that they do not share the extreme short-leggedness of the Japanese, which is probably due to the national habit of kneeling with the body resting on the heels — a position which must seriously cramp the muscles and interfere with the development of the legs. The Chinese normally sit on chairs and stools, and while the coolies sometimes squat, they never kneel.

The children in the Chinese table show a proportionately longer spine and larger skull than Japanese or occidental children, but it is the exceedingly small ones who bring up the average. The larger and healthier Chinese children (numbers 3, 9, and 41, for instance) are proportioned remarkably like occidentals.

The excessive variability of the Chinese children, both in height and in bodily proportions, as compared either with Japanese or occidentals, is doubtless due—as it is all a variability *downward*, a prevalence of undersized children—to malnutrition and unhygienic conditions of life. Canton is an overcrowded and extremely dirty city, and considering how markedly the size of children among occidentals is affected by density of population, it is likely that Chinese country children would make a better showing.

It would be interesting to know whether many centuries of foot-binding have had any effect in stunting the development of the unbound Chinese foot. The average length of foot expressed in relation to height for all the Chinese children in the table is 15.8 percent, exactly the same as for all the Japanese. The European average derived from Daffner and Quetelet also lies between fifteen and sixteen percent. Of the forty-six Chinese children whose feet were measured, twelve are marked as belonging to the boat population, coolie, or artisan class, who do not bind their feet, twelve are credited to the middle and upper classes, and in the case of the remaining twenty-two the class to which the parents belong is left uncertain. Even in the upper classes the hereditary tendency, if it exists, must be diluted by the frequent introduction of secondary wives of low rank—often slave girls—whose children are, however, entirely legitimate and inherit the family name and fortunes. The feet of the twelve children marked as belonging to the middle and upper classes have an average length of $15\frac{1}{2}$ percent of their height, while the feet of the ten coolie children whose proportion to their height is obtainable, average $16\frac{1}{2}$ percent. It is doubtful whether the difference is greater than would exist between the upper and lower classes in any country.

The observations on dentition show the widest departure from occidental standards. The time for the appearance of the first incisors seems rather late, and with the Japanese the whole process of acquiring the milk-teeth is a slow one. The table shows it complete in one two-year-old, but incomplete in all the three-year-olds and four-year-olds and in four out of seven five-year-olds. With the Chinese, on the other hand, the process, once begun, seems to go forward very rapidly, there being only two instances out of

TABLE I.—CHINESE OF CANTON

AGE.	SEX.	WEIGHT (kg.)	HEIGHT (cm.)	Spine (cm.)	Chest (cm.)	Skull (cm.)	Arm (cm.)	Foot (cm.)	NO. OF TEETH.	HEALTH, ETC.	PARENTAGE.
1 1 day.	M	—	50.8	30.5	31.8	30.5	—	5.1	0	—	Middle class.
2 2 ms.	F	—	48.3	27.9	30.5*	30.5	—	7.6	0	Sore eyes.	—
3 2 "	F	—	53.3	25.4	36.8	38.1	—	8.1	0	Healthy.	Upper class.
4 3 "	F	—	43.2	17.8	35.6	37.6	—	8.4	0	"	Boat woman's child. ¹
5 3 "	M	6.8	58.4	21.6	40.6	39.3	—	8.9	0	Very healthy. Sits alone.	Christian parents. ²
6 4 "	F	—	41.9	—	—	26.7	—	—	0	—	Lower class.
7 4 "	M	—	48.3	22.9	30.5	49.5	—	8.9	0	Unhealthy. Hydrocephalous.	Coolie.
8 4 "	F	—	58.4	27.9	38.1	35.6	—	7.6	0	Sickly. Boils on head.	—
9 5 "	M	—	76.2	30.5	38.1	36.8	—	7.0	0	Healthy.	—
10 6 "	F	—	52.7	25.4	34.3	37.5	—	8.9	0	"	Coolie.
11 7 "	F	6.6	63.5	35.6	40.6	44.5	—	11.4	0	"	—
12 9 "	M	—	58.4	30.5	43.2	41.9	—	10.2	0	"	Coolie.
13 10 "	M	—	—	—	—	43.2	—	11.4	4	"	Artisan.
14 10 "	F	—	62.2	25.4	—	44.5	—	11.4	2	"	—
15 1 yr.	F	—	55.9	25.4	—	40.6	—	8.9	6	Sickly. Child in hospital for wasting disease.	Middle class.
16 1 "	M	—	71.1	34.3	47.0	45.7	—	13.3	8	Fat and healthy. Does not talk.	Coolie.
17 1 "	F	—	66.0	30.5	43.2	43.2	—	10.2	4	Has boils.	—
18 1 1/4 "	M	—	50.8	31.1	45.7	45.7	—	33.0	8	Healthy.	Christian middle class.
19 1 1/2 "	F	6.3	68.6	27.9	48.3	43.2	25.4	10.2	12	Healthy. Begins to walk.	Lower class.
20 2 yrs.	M	—	76.2	33.0	52.1	47.0	31.8	14.0	18	Healthy. Walks, talks.	Christian.
21 2 "	M	—	53.3	22.9	38.1	39.3	—	10.2	15	Has skin disease.	Middle class.
22 2 "	F	—	76.2	35.6	45.7	47.6	—	12.7	7	Healthy.	—
23 2 "	F	—	91.4	35.6	41.9	43.2	—	11.4	12	"	Middle class.
24 2 1/4 "	M	—	85.1	33.0	47.6	48.3	38.1	14.0	20	Healthy. Walks, talks.	Christian.
25 2 1/2 "	M	13.3	85.1	—	49.5	45.7	38.1	14.0	20	Healthy.	Middle class.
26 3 "	F	—	—	—	43.2	40.6	—	10.2	20	—	—
27 3 "	F	—	76.2	30.5	48.3	45.7	—	12.7	20	Healthy.	Middle class.
28 3 "	M	—	66.0	30.5	43.2	43.2	—	10.2	20	Discharge from ear.	—
29 3 "	M	—	81.3	35.6	45.7	43.2	—	13.3	22	Healthy.	Coolie.
30 4 "	M	—	94.0	38.1	50.8	45.7	43.2	15.9	—	"	Christian.
31 4 "	F	—	100.3	38.1	49.5	50.2	43.2	14.9	—	"	—
32 4 "	F	—	78.7	35.6	48.3	50.8	—	15.2	22	Fat and healthy.	Sister of No. 29.

¹ Lowest class.² Father a pharmacist, mother assists in dispensary.

TABLE II.—JAPANESE (ALL OF NAGASAKI EXCEPT 1, 2, 3, 4, AND 12)

AGE.	SEX.	WEIGHT (<i>kg.</i>)	HEIGHT (<i>cm.</i>)	SPINE (<i>cm.</i>)	CHEST (<i>cm.</i>)	SKULL (<i>cm.</i>)	ARM (<i>cm.</i>)	FOOT (<i>cm.</i>)	NO. OF TEETH.	HEALTH, ETC.	PARENTAGE.
1	6 ds.	F	2.5	45.7	21.6	—	—	8.1	0	Appears healthy, born at 8 months.	Merchant.
2	3 ms.	F	5.4	55.9	22.9	46.4	27.3	8.9	0	Very healthy.	Blacksmith.
3	9 "	M	—	59.7	24.1	48.3	21.6	9.5	0	Uncle says can sit alone. Spine did not seem strong.	Merchant.
4	1 yr.	F	—	68.6	28.6	45.7	25.4	—	2	Sickly, sits up, cannot stand, born at 8 months.	Sister of No. 1.
5	20 ms.	M	—	54.6	27.9	40.6	28.6	9.5	6	Healthy.	—
6	2 1/4 yrs	F	8.8	83.8	33.0	52.1	32.4	12.7	12	Healthy, cut first tooth at 13 months.	—
7	2 1/2 "	M	—	88.3	30.5	45.7	26.7	13.3	20	Healthy.	—
8	3 "	M	9.9	82.6	30.5	47.0	25.4	12.7	13	—	—
9	3 "	F	13.2	77.5	33.0	43.2	27.3	12.7	12	Healthy.	—
10	4 "	F	11.2	76.2	30.5	47.6	29.2	12.7	14	Healthy.	—
11	4 1/4 "	M	15.8	101.6	38.1	55.2	33.0	16.5	16	Healthy, cut first tooth 8 months, weaned at 12 months.	—
12	5 "	F	—	94.0	38.1	55.9	40.6	16.5	—	Bright and healthy.	Artisan.
13	5 "	F	17.5	103.5	38.1	54.6	31.8	16.5	20	Healthy.	—
14	5 "	M	17.7	102.9	36.8	58.4	29.9	16.5	20	—	—
15	5 "	M	—	112.4	43.2	59.7	43.2	15.9	20	Healthy.	—
16	5 "	M	17.7	90.2	38.1	50.8	45.1	14.0	18	Healthy.	—
17	5 "	M	17.7	96.5	33.0	50.8	27.3	14.0	18	Very healthy, never been ill.	—
18	5 1/4 "	F	18.1	96.5	38.1	61.0	39.3	15.2	18	—	—
19	5 1/2 "	M	18.6	99.1	34.3	50.8	29.9	14.6	18	Very healthy.	—
20	6 "	F	17.7	106.7	38.1	54.6	33.0	17.8	24	Healthy.	—

JAPANESE EURASIAN

21	5 1/2 yrs	F	15.0	99.1	40.0	53.3	48.3	30.5	17.1	20	—
22	6 "	F	15.9	106.7	41.9	53.3	49.5	31.8	17.8	24	—

twenty-eight recorded in which it is incomplete after the age of two and a half years. But the most remarkable phenomenon of this group is the precocity of the Chinese in the matter of the so-called six-year-old molars. The two six-year-old children observed each had two of these molars. Of six five-year-old children, one had one, one two, and two all four of the molars. Of ten four-year-olds, three had two molars and one had all four. Of the seven three-year-olds, two had already cut two of the permanent molars. The single seven-year-old boy whose teeth were examined not only had all of his six-year-old molars, but two of the so-called twelve-year-old molars. It will be seen by reference to the table that this precocity in the molars is equally marked at Canton in the extreme south and at Wuhu in the central valley of the Yang-tse.

A SUGGESTION TO MAYA SCHOLARS¹

By ZELIA NUTTALL

Some years ago, on making a comparison between the Mexican and Maya systems of numeration, I learned from the celebrated Friar Beltran de la Rosa's work on the Maya language, first printed in 1746, that, like the Mexicans, the Mayas employed a number of affixes which, when added to their numerals, furnished an indication as to the *kind* of object that was enumerated. Just as the Mexicans, for instance, add the affix *tetl* to each numeral when they are counting chickens, eggs, cocoa, tamales, loaves of bread, melons, etc., so the Mayas affixed the syllable *te* when they counted not only eggs, cocoa, and calabashes, but also years, months, and days.

Now, while Molina, in his *Diccionario de la lengua Castellana y Mexicana*, records the uses of only six affixes or methods of counting besides what he terms the "general count" (in which the numerals were employed without affixes), the Maya dictionary records the use of not fewer than seventy-five affixes, of which I shall cite the following examples :

The affix *ac* was employed in counting canoes, boats, houses, lots, churches, seats, altars, canes, pits, troughs, villages, and fields. The affix *mol* was used in counting things which are united, gathered, or congregated together. When birds, fishes, and animals were counted the affix *pok* was employed. On the other hand, *tul* was added in counting men and women. The affix *pec* denoted that the things counted were flat and round, like tortillas, maize-cakes, etc. *Bak* was used for counts of four hundred. The affix *oc* signified objects which were measured by handfuls ; *ual* for leaves of tobacco, plantain trees, etc.; *piz* for pieces of money, also years and days ; *much* for heaps of stones, earth, grain, etc.; *hat*, for pairs of things ; *ahau* for twenty-day periods ; *auat* for distances ; *cuc* for measures ; *cuch* for loads ; *chuy* for bags, bunches of fruit, strings

¹ Read before the International Congress of Americanists, New York meeting, October, 1902.

of beads, in fact for all things which could be carried hanging from the hand.

These few examples will suffice for the present to demonstrate the Maya system of affixes, with which I was long acquainted before I began to wonder how the Mayas could have expressed or recorded them in connection with numerals in their hieroglyphic writing. That they must have done so seems apparent; and as a cursive method of expressing what objects were being counted, the affixes must have been most useful. Indeed, Friar Beltran de la Rosa points out the advantages of the system. He says: "The affixes united to the numerals ranging from *hun*, which is one, to any high number, enable one to distinguish the things that are being enumerated. For instance, *huntul* denotes one man; *hun-pok* an animal or bird; *hun-cuch*, one load, etc. Therefore, when a person says *hunpok* you know that it signifies quadrupeds, or winged animals, or other irrational creatures, although the affix *pel* is the generic for all things, that is to say, the 'general count.'"

Returning to the question as to the probable method by which the Mayas would have recorded these indispensable numerical affixes, it has seemed most probable that, like the Mexicans, they would have chosen some object, easily painted or carved, the sound of the name of which exactly or closely resembled that of the affixes. During a hasty search in a Maya dictionary for names of natural objects which in sound are similar to some of the affixes, I found the following:

The affix *ac* is like *ak*, the Maya name for turtle and tongue; therefore a turtle or a tongue depicted next to a numeral could serve to indicate that a number of houses, villages, fields, etc., were being recorded. The term *bak*, a bone or a rock, is identical with the affix *bak*, hence a representation of a bone or a rock in conjunction with a number might denote that counts of four hundred were being recorded. The name for a bag or satchel, *mucuc*, could be used to record the affix *muc*, which denotes that "numbers of times" are being counted, or the double, and that one has to pay "twice as much," "three times as much," etc.¹

¹On page lxx of the Dresden Codex are four separate representations of what resemble conventional figures of bags tied with a cord which is knotted above them.

A claw, *mol*, painted next to a numeral could express the affix *mol*, which signifies a congregation of things; and representations of a toad, *much*; a dog, *pec*; a quail, *num*; a foot or leg, *oc*; a seat, *dzam*; a bag or satchel, *mucuc*, could have recorded, in the same way, the exact sound of the affixes *much*, *pec*, *num*, *oc*, *dzam*, and *muc*.

It will doubtless occur to students of Maya hieroglyphics that amongst the latter are found numerals accompanied with representations of some of the natural objects enumerated. Moreover, amongst the familiar day-signs of the Maya calendar we find *ahau* and *oc*, both of which words figure in Beltran de la Rosa's list of affixes, the first denoting that twenty-day counts are being enumerated, the second that "handfuls" are being counted. A recognition of this important fact will necessitate a revision of such calculations and conclusions as have been made in the belief that numerals attached to the sign *ahan* designated a day-number only.

Without drawing hasty conclusions, and yet not placing undue value on the results I have obtained and here present, I desire to point out that systematic research along this new line promises to lead to interesting and possibly to valuable and unforeseen results. I would also draw attention to the fact that, although Maya scholars have bestowed much study upon the numerals contained in Maya inscriptions, no one, to my knowledge, has yet devoted attention to or even taken into consideration the existence of the seventy-five affixes above referred to, although they were and are habitually used, in connection with numerals, by the Maya people. The fact that these affixes should have been hitherto ignored or overlooked is as inexplicable as the groundless assumption, by Maya specialists, that all numerals recorded in the Maya codices are in the "general count." It must be admitted that no study of the Maya numeral system can be regarded as absolutely satisfactory and complete until these seventy-five affixes are studied in connection with

Three of these contain the numeral *six*, the remaining one the number *eight*. If it be assumed that the bag, *mucuc*, expressed the affix *muc* and the numerals recorded certain "numbers of times," the interpretation in three cases would be "six times as much" and in one case "eight times as much." It is obvious that such a possibility should be carefully weighed and investigated by those who are studying the numerals in the Maya codices.

recorded numbers, and I am therefore led to express the hope that in future they will receive the attention they unquestionably deserve.

In order to place these affixes within the reach of all students, I append a translation of Beltran de la Rosa's chapter xi, "On Maya Numerals," from his *Arte del Idioma Maya*, published in Mexico in 1746 and reprinted in Merida in 1859:

ON THE NUMERAL, ITS TABLES AND PARTICLES

1, Hun.	36, Uacлахuntukal.
2, Ca.	37, Uuclahutukal.
3, Ox.	38, Uaxacлахutukal.
4, Can.	39, Bolonlahutukal.
5, Ho.	40, Cakal.
6, Uac.	41, Huntuyoxkal.
7, Uuc.	42, Catuyoxkal.
8, Uaxac.	43, Oxtuyoxkal.
9, Bolon.	44, Cantuyoxkal.
10, Lahun.	45, Hotuyoxkal.
11, Buluc.	46, Uactuyoxkal.
12, Lahcá.	47, Uuctuyoxkal.
13, Oxlahun.	48, Uaxactuyoxkal.
14, Canlahun.	49, Bolontuyoxkal.
15, Holhun.	50, Lahuyoxkal.
16, Uuacлахun.	51, Buluctuyoxkal.
17, Uuclahun.	52, Lahcatuyoxkal.
18, Uaxacлахun.	53, Oxlahutuyoxkal.
19, Bolonlahun.	54, Canlahutuyoxkal.
20, Hunkal.	55, Holhuyoxkal.
21, Huntukal.	56, Uacлахutuyoxkal.
22, Catukal.	57, Uuclahutuyoxkal.
23, Oxtukal.	58, Uaxacлахutuyoxkal.
24, Cantukal.	59, Bolonlahutuyoxkal.
25, Hotukal.	60, Oxkal.
26, Uactukal.	61, Huntucankal.
27, Uuctukal.	62, Catucankal.
28, Uaxactukal.	63, Oxtucankal.
29, Bolontukal.	64, Cantucankal.
30, Lahucakal.	65, Hotucankal.
31, Buluctukal.	66, Uactucankal.
32, Lahcatukal.	67, Uuctucankal.
33, Oxlahutukal.	68, Uaxactucankal.
34, Canlahutukal.	69, Bolontucankal.
35, Holhucakal.	70, Lahucankal.

71, Buluctucankal.	101, Huntu uackal.
72, Lahcatucankal.	102, Catu uackal.
73, Oxlahutucankal.	103, Oxtu uackal.
74, Canlahutucankal.	104, Cantu uackal.
75, Holhucankal.	105, Hotu uackal.
76, Uaclahutucankal.	106, Uactu uackal.
77, Uuclahutucankal.	107, Uuctu uackal.
78, Uaxacalahutucankal.	108, Uaxactu uackal.
79, Bolonlahutucankal.	109, Bolontu uackal.
80, Cankal.	110, Lahu uackal.
81, Hutuyokal.	111, Buluctu uackal.
82, Catuyokal.	112, Lahcatu uackal.
83, Oxtuyokal.	113, Oxlahutu uackal.
84, Cantuyokal.	114, Canlahutu uackal.
85, Hotuyokal.	115, Holhu uackal.
86, Uactuyokal.	116, Uaclahutu uackal.
87, Uuctuyokal.	117, Uuclahuntu uackal.
88, Uaxactuyokal.	118, Uaxacalahutu uackal.
89, Bolontuyokal.	119, Bolonlahutu uackal.
90, Lahuyokal.	120, Uackal.
91, Buluctuyokal.	121, Huntu uackal.
92, Lahcatuyokal.	122, Catu uackal.
93, Oxlahutuyokal.	123, Oxtu uackal.
94, Canlahutuyokal.	124, Cantu uackal.
95, Holhuyokal.	125, Hotu uackal.
96, Uaclahutuyokal.	126, Uactu uackal.
97, Uuclahutuyokal.	127, Uuctu uackal.
98, Uaxacalahutuyokal.	128, Uaxactu uackal.
99, Bolonlahutuyokal.	129, Bolontu uackal.
100, Hokal.	130, Lahu uackal.

NOTE : From this number up to 400 I shall cite only four numbers of each group of ten, as it is easy to count the intermediate numbers by following the system indicated.

131, Baluc tu uackal.	165, Hotu bolonkal.
135, Holhu uackal.	170, Lahu bolonkal.
140, Uackal.	171, Buluc bolonkal.
141, Huntu uaxackal.	175, Holhu bolonkal.
145, Hotu uaxackal.	180, Bolonkal.
150, Lahu uaxackal.	181, Huntu lahunkal.
151, Buluc tu uaxackal.	185, Hotu lahunkal.
155, Holhu uaxackal.	190, Lahu tu lahunkal.
160, Uaxackal.	191, Buluc tu lahunkal.
161, Huntu bolonkal.	195, Holhu tu lahunkal.

200, Lahunkal.	311, Buluc tu uacлахukal.
201, Huntu buluckal.	315, Holhu tu uacлахukal.
205, Hotu buluckal.	320, Uacлахukal.
210, Lahu tu buluckal.	321, Huntu uucлахukal.
211, Buluc tu buluckal.	325, Hotu uucлахukal.
215, Holhu tu buluckal.	330, Lahu tu uucлахukal.
220, Buluckal.	331, Buluc tu uucлахukal.
221, Huntu lahcakal.	335, Holhu tu uucлахukal.
225, Hotu lahcakal.	340, Uucлахukal.
230, Lahu tu lahcakal.	341, Huntu uaxacлахukal.
231, Buluc tu lahcakal.	345, Hotu uaxacлахukal.
235, Holhu tu lahcakal.	350, Lahu tu uaxacлахukal.
240, Lahcakal.	351, Buluc tu uaxacлахukal.
241, Huntu yoxlahunkal.	355, Holhu tu uaxacлахukal.
245, Hotu yoxlahunkal.	360, Uaxacлахukal.
250, Lahu tu yoxlahunkal.	361, Huntu bolonlahukal.
251, Buluc tu yoxlahunkal.	365, Hotu bolonlahukal.
255, Holhu tu yoxlahunkal.	370, Lahu bolonlahukal.
260, Oxlahukal.	371, Buluc tu bolonlahukal.
261, Huntu canlahukal.	375, Holhu tu bolonlahukal.
265, Hotu canlahukal.	380, Bolonlahukal.
270, Lahu tu canlahukal.	381, Huntu hunbak.
271, Buluc tu canlahukal.	385, Hotu hunbak.
275, Holhu tu canlahukal.	390, Lahu hunbak.
280, Canlahunkal.	391, Buluc tu hunbak.
281, Huntu holhukal.	395, Holhu tu hunbak.
285, Hotu holhukal.	400, Hunbak.
290, Lahu tu holhukal.	500, Hotubak.
291, Buluc tu holhukal.	600, Lahutubak.
295, Holhu tu holhukal.	700, Holhutubak.
300, Holhukal.	800, Cabak.
301, Huntu uacлахukal.	900, Hotu yoxbak.
305, Hotu uacлахukal.	1000, Labuyoxbak, vel hunpic.
310, Lahu tu uacлахukal.	2000, Capic.

I note here that having counted up to 400, or a *humbak*, the Indians continued to count by groups of 400, saying *humbak*, *cabak*, *oxbak*, etc., or one 400, two 400, three 400, etc., just as we say one thousand, two thousand, etc. But if a minor number be added to the 400 it is counted according to the method given above, the minor number, however, being preceded by the separate particle *catac*, which means "and." Thus, the number 450 is expressed by *humbak catac lahuyoxhal*, and so on.

I also note that, although the Indians originally used the word *pic* to signify 8000, it has become usual to employ *pic* to signify 1000. Therefore, in

order to avoid confusion, I will employ *pic* for 1000, and in order to designate the present century (or year), which is 1743, I will say *hunpic holhutubak*, *catac oxtuyoxkal*, placing *catac* before the last number.

MULTIPLICATION TABLE

2 x 2 = 4	Calem ca = Can.
2 x 3 = 6	Calem ox = Uac.
2 x 4 = 8	Calem cam = Uaxac.
2 x 5 = 10	Calem hó = Lahun.
2 x 6 = 12	Calem uac = Lahca.
2 x 7 = 14	Calem uuc = Canlahun.
2 x 8 = 16	Calem uaxac = Uaclahun.
2 x 9 = 18	Calem bolom = Uaxaclahun.
2 x 10 = 20	Calem lahun = Hunkal.
3 x 3 = 9	Oxlem ox = Bolon.
3 x 4 = 12	Oxlem cam = Lahca.
3 x 5 = 15	Oxlem hó = Holhun.
3 x 6 = 18	Oxlem uac = Uaxaclahun.
3 x 7 = 21	Oxlem uuc = Huntukal.
3 x 8 = 24	Oxlem uaxac = Cantukal.
3 x 9 = 27	Oxlem bolón = Uuctukal.
3 x 10 = 30	Oxlem lahun = Lahucakal.
4 x 4 = 16	Calem can = Uaclahun.
4 x 5 = 20	Calem hó = Hunkal.
4 x 6 = 24	Calem uac = Cantukal.
4 x 7 = 28	Calem uuc = Uaxactukal.
4 x 8 = 32	Calem uaxac = Lahcatukal.
4 x 9 = 36	Calem bolón = Uacлахutukal.
4 x 10 = 40	Calem lahun = Cakal.
5 x 5 = 25	Holem hó = Hotukal.
5 x 6 = 30	Holem uac = Lahucakal.
5 x 7 = 35	Holem uuc = Holhucakal.
5 x 8 = 40	Holem uaxac = Cakal.
5 x 9 = 45	Holem bolón = Hotuyoxkal.
5 x 10 = 50	Holem lahun = Lahuyoxkal.
6 x 6 = 36	Uaclem uac = Uacлахutukal.
6 x 7 = 42	Uaclem uuc = Catuyoxkal.
6 x 8 = 48	Uaclem uaxac = Vaxactuyoxkal.
6 x 9 = 54	Uaclem bolón = Canлахutuyoxkal.
6 x 10 = 60	Uaclem lahun = Oxxal.
7 x 7 = 49	Uuclem uuc = Bolontuyoxkal.
7 x 8 = 56	Uuclem uaxac = Uacлахutuyoxkal.

7 x 9 = 63	Uuclem bolón = Oxtucankal.
7 x 10 = 70	Uuclem lahun = Lahucankal.
8 x 8 = 64	Uaxaclem uaxac = Catucankal.
8 x 9 = 72	Uaxaclem bolón = Lahcatucankal.
8 x 10 = 80	Uaxaclem lahun = Cankal.
9 x 9 = 81	Bolonlem bolón = Huntuyokal.
9 x 10 = 90	Bolonlem lahun = Lahuyokal.
10 x 10 = 100	Lahulem lahun = Hokal.
10 x 100 = 1000	Lahulem hokal = Hunpic.
10 x 1000 = 10000	Lahulem hunpic = Lahupic.
10 x 10000 = 100000	Lahulem lahupic = Hokalpic.
10 x 100000 = 1000000	Lahulem hokalpic = Hunkinchil.
Xocol, buxoc, baxoc.	} Count, generally speaking.
Buxoc, baxoc.	
Yaabcunahkoc, Dzaackoc.	} To multiply.
Kinchil, huntzotzceh.	
Hun calab.	One hundred and sixty thousand.
Hun alau.	Sixty-four counts.
Uac calab, catac cakalpic.	} One count or million, which is the same.
Hunkinchil, ca kinchil, ox kinchil, etc.	

NUMERICAL AFFIXES

When joined to the above numerals ranging from one (*hun*) to one thousand (*pic*), or indeed to any cipher, the following affixes enable one to distinguish what objects are being counted. For instance, *huntul* is "one man," *hunpok* is "one animal or bird," *huncuch* is "one load," etc. According to this method, when the form *hunpok* was used, one knew that one was speaking of quadrupeds, birds, or other irrational creatures. At the same time the particle *pel* is generic and comprises all things.

Ac. For counts of canoes, boats, houses, lots, seats, earthen vessels, churches, altars, caves, holes or pits, troughs, villages, or maize fields.

Ahau. For counts of the twenty-year groups of the Maya calendar, which are like our indictions, although they consist of a larger number of years than these. The native century or era contained 13 *ahaues*, or 260 years.

Auat. For counts of distances: miles or quarters of leagues.

Bak. For counts of 400; because just as we count by thousands, the Indians counted by 400, saying *humbak*, *cabak*, etc.

Bal. For counts of ends of ropes,¹ of thread, etc.

Balach. For counts of strokes, of measurements made by rule line or compass; for instance, to the question *Hay balach à pizic à dzib?* "How many strokes didst thou make in thy painting or into how many lines didst thou divide it? The answer would be: *hunbalach*, *cabalach*, etc. "With one," "with two," etc.

Balak. For counts of the turns given to cords laid in circles, or to similar things which are twisted or twined. (Compare *Codz.*)

Ban. For counts of things in heaps. The same as *banab*, which also serves for counting small flocks or herds of animals.

Cot. For counts of quadrupeds.

Cotz. For lengths of threads, cords, rods or staffs; for "pieces" of time:² for instance, *hun cotz kan*, "a piece of cord."

Codz. For rolls or circular twists; for instance, *hun codzak*, "a roll of cord" (made of native vines). (Compare *Balak.*)

Cuc. For elbow measurements.

Cuch. For counts of loads.

Cul. For shrubs, young trees, maize plants, and balls or lumps of dough.

Zap. For counts of arm's lengths; each contains two yards.

Chach. For handfuls of herbs or hair.

Chiic. For incised wounds made by arrows, lances, knives, sticks, etc., which are thrown and remain sticking in the flesh.

Chot. For counts of skeins of thread.

Chuy. For bunches of fruit, strings of beads, necklaces, braids, bags, and things which are carried hanging from the hand.

Em. For births; for instance, *U can em yalen in naa*, "I am the fourth son borne by my mother."

Hat. For mantles or "*pati*," for "*piernas*" of mantles or *pati*; also for splinters of wood.

Hau. For gourd vessels split into halves, pages of writing, quarters of dead animals, and slices of fruit.

Heb, Hebal, Hebèl. For "*piernas*" of mantles or "*pati*"; also for the counting of provinces; for instance, *ma hun heb u cuchcabal bálcah i*, "the world is not a single province." Even without expressing *cuchcabal*, which means province, it is sufficient to say *ma hun heb balcahi*. This affix is also used to designate the parts of the world; for instance, *tu can hebal bal cah*, "in the four quarters of the world."

¹ The Spanish word *ramales*, employed here, also signifies branches, halters, divisions.—Z. N.

² The Spanish word *tiempo*, "time," which appears in the text, may possibly be a misprint, as it is unusual to speak of "pieces of time." Compare *Hech* and *Latthabkin*, used for counts of hours.—Z. N.

Heck. For counting hours and pages of books; *kin*, "one hour"; *hun heck dzabilhuun*, "a page used in counting strings of bells, as, for instance of bells."

Hek. For counts of branches or bunches.

Lath. For counts of dishes of food.

Lathabkin. For hours: *hun lathabkin*, "once."

Lem. For counts of times: *hun lem*, "once."

Lot. For counting in pairs, such as *can lot*.

Mal. For counting numbers of times. (Compare *can*).

Muc. For the same count of times and for "twice as much," "three times as much," etc.

Much. For small heaps of seeds, stones, eggs, birds, and people.

Mal. For counts of things that are united closely.

Nac. For things that are close to each other; seated men; for instance, *Hay nac dzulob tu x*, "Five are seated in their chairs?" *Hô nac ob*, "Five."

Nacat. For recumbent living beings; for instance.

Num. For times, when expressed by ordinal numbers; *can numilin chapahal lae*, "this is the fourth time."

Paac. For mantles or "paties" of four pieces of stuff).

Pach. For counting birds and other animals up to 19, after which the expression *hun tab*, "twenty."

Pay. For things which are long and not thick; sea-boats, wooden beams, bales of cloth, and sleds.

Pec. For circular things, such as consecrated stones which are flat.

Pet. For maize-fields and for pastures.

Peds. For chapters of books and for orations.

Piz. For years, days, months, and coin (usually a dollar).

Pich. For pieces of a thing cut off and for pieces.

Pok. For fish, birds, and animals.

Pul. For lashes given with a whip or blow; the blade of a sword.

Ppeel. For the counting of all things in general.

Ppic. For a written chapter or articles of a book; each row or stone being above the other.

Ppiz. For any kind of measure or weight. *fanega* usually expresses a *fanega* or measure consisting of 120 pounds.

¹ A *fanega* is a dry measure of about an English bushel.

Ppoch. For bunches of fruit.

Ppuuc. For plants and trees. The particle *xec* is more popularly used.

Ppuc. For mouthfuls of food or swallows of liquid.

Tax. For things which follow each other in order or in line; also for heavens: *tu yox tax caan*, "in the third heaven," and for regions: *tu yox tax metnal*, "in the third region¹ of hell." This particle is an ordinal number like "first," "second," etc., and when it is joined to another number it ceases to be a numeral and becomes a noun, signifying "said region." Thus, *canpel utax al metnal* signifies "the regions of hell are four in number."

Tē. For counts of years, months, days, leagues, cocoa, eggs, and calabashes or squashes. Example: *hunte ti haab*, "one year"; *hotē cacao*, "five grains of cocoa."

Ten. For numbers of times, and *tenac* for past times. Example: *Hay-tenac à zipci?* "How many times didst thou pass?" *Hotenac* = "five times." *Tenel* is also used for times, but with the particle *bahuu*, or *bahunx* or another. Example: *Bahunx ú tenel?* "How many times?" The answer has to designate an indefinite number, such as *yaab ú tenel*, "many times," for it would not be correct to answer *hunte nel* unless this numeral were joined to another, as in *canten* or *tenel*.

Tuc. For counts of heaps.

Tul. For counts of men, women, angels, and souls.

Thil, tzool. For things placed in order or file and for the subdivisions of a house.

Thal. For lines, furrows, ditches, or trenches, and for pages, printed columns, naves of churches, etc.

Tsiil. For the selva of mantles or cloths and for folds of paper or the leaves of books.

Tsuc. For towns, paragraphs, articles, chapters, notices, heaps or piles, divisions of a whole in various parts.

Dzac. For steps, grades, crowns, or things which are placed one over the other, or for something that succeeds another, such as one governor after another. It is then an ordinal number. Example: *Ú cadzac Halachuinic tali uaye*, "the second governor who came here."

Dzam. For counts of consecrated wafers, pamphlets, shoes, and of all things which are counted in pairs.

Dzic. For counts of persons, this particle being specially dedicated to the persons of the Holy Trinity. It is also employed for counting fingers (for instance, *ú caxic yal in kab*, "the second finger of my hand"), as well as for the husbands or wives that a person has had, for instance: *cadzic chuplil yanacti*, "he has had two wives."

Dzil. For candles; cane pipes; long fruits, such as bananas; also alligator pears, ears of corn, the mamey fruit, etc.

¹ The Spanish word employed is *seno*, lit. bosom, also depths, etc.—Z. N.

Uudz. For counts of folded cloths and similar things.

Ual. For leaves of tobacco, of banana trees, etc.

Uadz. For counting journeys or the number of times a person goes and comes in performing some business, for instance: *cauas xiu in talzah*, "I have made two journeys carrying grass or herbs."

Uol. For balls of dough, bundles of cotton or of wool, balls of thread and other round things.

Xec. For trees and other plants.

Kaz. For closets, rooms, and subdivisions of a house.

Oc. For things which are measured by handfuls.

Nab. For what is measured by handbreadths.

Chinab. For what is measured by *gemes*; i. e., the space from the end of the thumb to end of the forefinger extended.

Yal. For sheaths or things that are brought together.

PRECOLUMBIAN WEST INDIAN AMULETS

By J. WALTER FEWKES

In all large collections of prehistoric objects from the West Indies there occur small images carved from stone, shell, and bone, perforated for suspension from the person. Although many of these fetishes or amulets are known, few have been described or figured, and there is little recorded information as to their various forms. It is in the hope of adding to the knowledge of these objects that I have prepared this article.

The first known figures of West Indian prehistoric amulets appear on a map of Santo Domingo, dated 1731, published by Charlevoix.¹ This map bears under the figures the legend, "*Figures superstitieuses de Zemi ou Mabouya de la façon anciens Insulaires*," showing that the "religious" character of the objects was early recognized. The suggestion that they are *zemis*, or idols, which were tied to the forehead, was first made by Professor Mason more than a hundred and twenty-five years later.

Among the early figures of Santo Dominican amulets are those of Sr Antonio del Monte y Tejada, published in his *Historia de Santo Domingo*, 1853. Two of these represent frogs; the other four are the same as those figured in this article.

In a German translation of my Vice-presidential address, *Prehistoric Porto Rico*, delivered before Section H of the American Association for the Advancement of Science, the editor of *Globus* (Nos. 18, 19, 1902) has introduced four fine figures of two amulets from Gonaives island, Hayti.

¹ *Histoire de l'isle Espagnole ou de S. Dominigue*, Paris, 1730-01. In his preface Charlevoix states that he obtained the manuscript of this work, with permission to publish it, from the author, Jean Baptiste le Pers. Mr H. Ling Roth says that, according to Margry, le Pers repudiated Charlevoix's publication. The second volume of Charlevoix's work is dated 1731, the year borne by the map in the first volume. Three figures of *zemis* are given on this map, one of which belongs to my first type of human-form amulets. It is more difficult to identify the others, especially the one said to have been found in an Indian burial. Its general form resembles a tripointed idol or mammiform stone, but as no profile of the conical projection characteristic of this form is given, my identification is doubtful.

Argentina, figured by Ambrosetti,¹ which he is inclined to identify as that of an earth goddess. The sex of the majority of amulets in human shape from Santo Domingo is not generally represented, but one specimen was undoubtedly intended for a male.

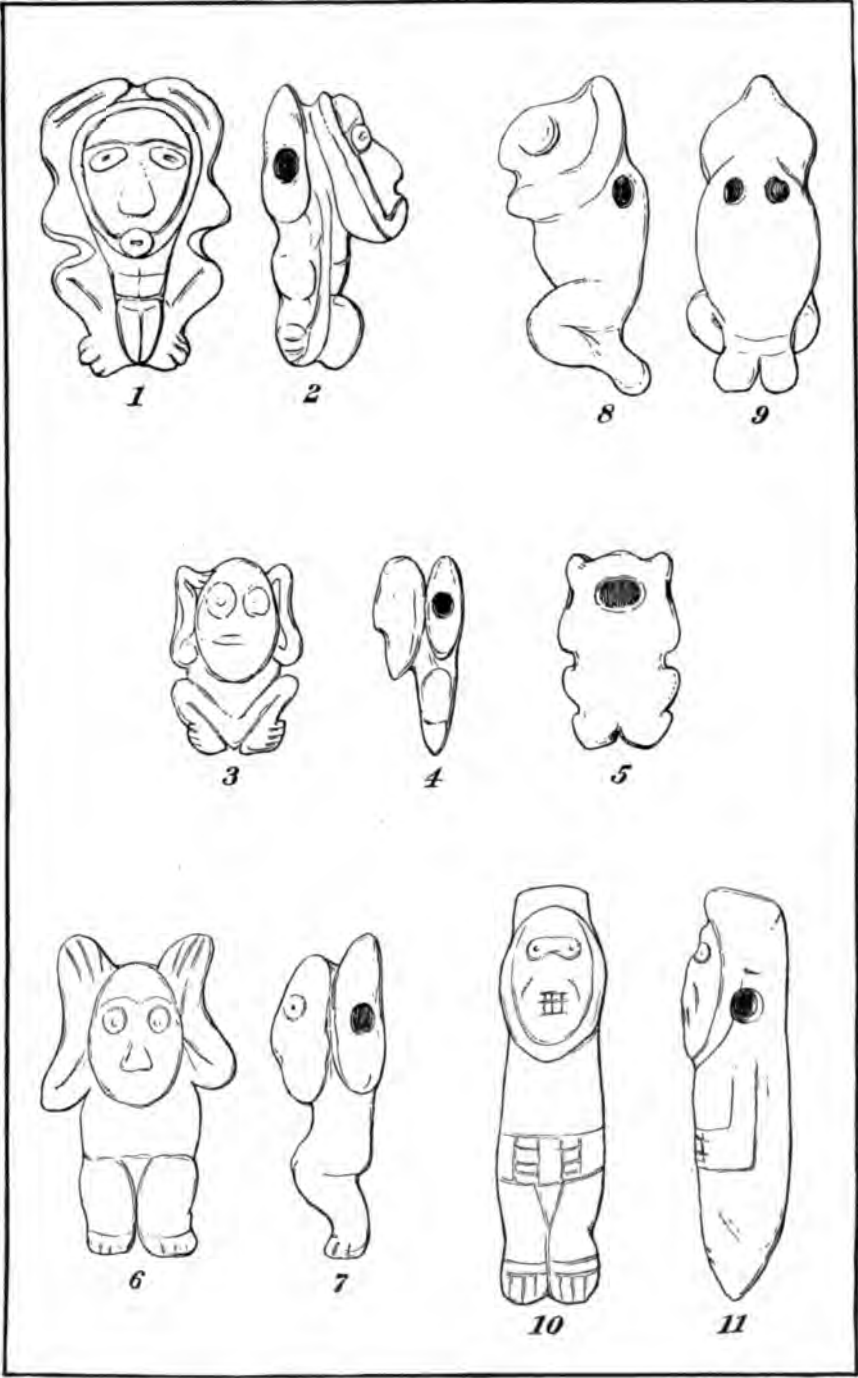
Amulets with arms raised above or at the sides of the head are not always figures of human beings, for in some instances these fetishes have bodies of animals and heads more or less anthropomorphic in character. Nevertheless this characteristic position of the arms is a good feature to use in a provisional classification of the human-formed fetishes.

One of the finest specimens of amulets of this type, or in fact of any kind, is owned by Mr Edward Hall, director of the railroad from Puerto Plata to Santiago, Santo Domingo. This beautiful amulet (pl. LII, 2, 3) is made of white stone and measures an inch and a half in length. Viewed from the front it will be noted that the arms are raised above the head, that the legs are retracted, and that the knees project on each side. The body is small, hardly equaling in length that of the face. A side view (fig. 2) shows that the head rises from the chest, and that the body is perforated from one side to the other. This specimen is said to have once belonged to a cacique, and to have been found near the headwaters of the Yaque river which flows through the Vega Real.²

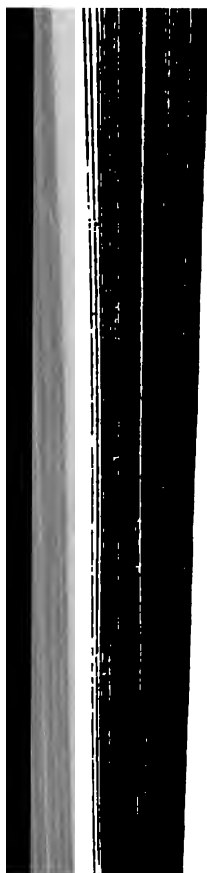
There is in the Imbert collection another amulet (pl. LII, 3) of the same type, found in Guanabino (Santiago). When seen from the side (fig. 4) the head apparently projects directly from the chest, as in the specimen last mentioned. The specimen is light-brown in color, and is a little more than an inch in length. The front view shows that the shoulders are raised to the side of the head (a position necessitated by the position of the latter), but the hands do not extend above the head. The legs are contracted as in the last specimen, and the toes point sidewise. The back of the specimen (fig. 5) is flat, with an elliptical depression at the level of the eyes.

¹ *Op. cit.*, figs. 23a-23d. There are many resemblances between Arawak prehistoric objects and those of the Calchaqui of Argentina. These likenesses, like those of the Pueblos to the Calchaqui, are interesting coincidences of independent origin.

² The figures on plates LII and LIII are copies of my drawings of specimens owned by Sr Ramón Imbert and Mr Edward Hall. I take this opportunity to thank these gentlemen for permission to publish the drawings.



AMULETS FROM SANTO DOMINGO



The lateral perforations which served for suspension open into this cavity.

Another amulet of the same type (pl. LII, 6, 7) is also found in the Imbert collection. The figure of this specimen has the hands raised above the head and the knees brought together in front.

A similar position of the legs appears in the specimen shown in pl. LII, 8, 9, in which no arms are represented. The head is cut at the end of the body and not on one side. This object, also from the Imbert collection, measures two inches in length and is perforated through the back.

The first type of amulets is represented in my Porto Rican collections by a specimen of which three views are shown in the accompanying pl. LIII, 1-3. This object, which closely resembles that represented in Mason's figure 32, was purchased from Sr Benito Fernandez of Loquillo, together with many other specimens of aboriginal manufacture from eastern Porto Rico. This smoothly polished amulet is made of light-green stone mottled with black. It measures two inches in length, and a little less than an inch across the shoulders and hips. Seen from the front, the head seems to rise directly from the chest, but from the side the neck is seen to be a mere constriction. The nose and chin are prominent, but the eyes and mouth are only obscurely indicated; there are incised horizontal lines across the forehead; the arms are raised, and scratches representing fingers appear at the sides of the head in the normal place of the shoulders. The legs are contracted, giving the figure a squatting attitude, and the toes are indicated by markings. A virile organ is prominent. Two perforations for suspension are drilled at the edges of the shoulders, and a depression marks the middle line of the back.

There are three amulets of this kind in the Latimer collection, one of which is figured by Mason. These specimens came from Porto Rico, and it is probable that an amulet in the Guesde collection, from Guadeloupe, to which he refers, belongs to the same type. There are other amulets of this form in the Nazario collection.

I have not found an amulet like the last mentioned among the collections from Santo Domingo, and it is believed that the form is

distinctly characteristic of Porto Rico ; but as the natives of the two islands frequently passed from one island to the other in precolumbian times, it is possible that this particular form will sooner or later be found in the former island. The failure to find this form of amulet in Cuba, Santo Domingo, and Jamaica, its existence in numbers in Porto Rico where there was considerable Carib blood, and a record of it from the Lesser Antilles, which at the time of Columbus were occupied by Caribs, make it possible that this form of amulet is Carib rather than Arawak.¹

The amulet represented in plate LIII, 9, 10, belongs also to the first type. This object is figured in Mason's figure 33, but the figure is misleading because the artist has represented a forearm on the side of the body instead of above the head. It is doubtful whether this amulet was intended to represent a human being or an animal. (Compare the specimens shown in pl. LII, 8, 9.)

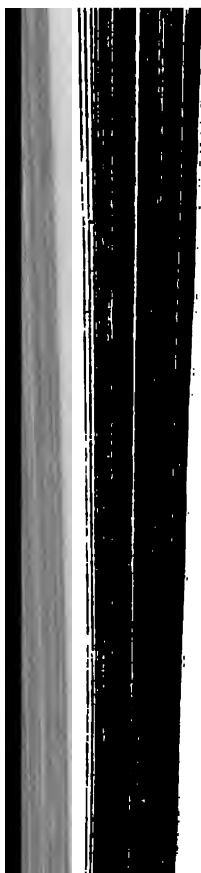
The second type of West Indian amulets of human form has the head placed normally on the body, so that the shoulders are brought to their proper position, the arms being represented on the chest, abdomen, or knees, or in front of the body. In this type the legs are brought together in such a way that the knees, and in some cases the extremities, are so imperfectly carved that this region of the amulet resembles that of a mummy. As shown in the figures, there is considerable variation in the forms of the amulets included in this type.

A good specimen of the second type, in the Imbert collection (pl. LII, 10, 11), was found at Yasicá. It is made of light-brown stone and measures two and one-half inches in length. The face is carved slightly in relief; the eyes consist of two dots enclosed in a dumb-bell shaped figure, while the teeth are simply scratched on the convex surface. The fingers are indicated by parallel marks, the legs and toes being made in a somewhat similar way. A side view of the amulet (fig. 11) shows perforations at the level of the mouth. The head and body are not differentiated, the backs of both being simply rounded.

¹ *Notas de Arqueología Calchaquí*, fig. 23, a-d, Buenos Aires, 1899. While the art products of the Antilleans are *sui generis*, they are more characteristic of the Arawak than of the Carib people of South America. Antillean art was comparatively pure Arawak in Cuba and Santo Domingo, but in the Lesser Antilles it was mixed with Carib.



AMULETS FROM SANTO DOMINGO AND PORTO RICO



Another amulet (pl. LIV, 1) of the same type, also from the Imbert collection, was found in Janico by Sr José Tolentino. It is made of white stone and measures three and one-quarter inches in length. The eyes are enclosed by an incised dumb-bell like figure, the mouth, teeth, and cheeks being indicated by incised lines. No relief work is attempted in representing the arms, and the fingers are mere parallel marks near a pit surrounded by a circle intended for the umbilicus. The legs are comparatively large;¹ no toes are represented.

Another amulet (pl. LIV, 2, 3) in the Imbert collection, made of white stone and found at Ysabela by Sr Luis Passailaique, measures three and a half inches long and has arms appressed to the sides of the body, the fingers being indicated by incised lines. The back is slightly concave and the face is cut in low relief. Perforations, intended like the others for suspension of the object, are situated on the back on each edge at a level with the mouth. Leg-bands are indicated by lateral wart-like elevations near the position of the knees, and the toes are faintly marked.

Pl. LIV, 4-6, represents a shell amulet in the Imbert collection which also was obtained at Ysabela by Señor Passailaique. It is about two and one-quarter inches in length, and is well polished and carved. The image has a squatting posture, the knees being brought together and the body resting on the toes. The head bears carvings supposed to represent feathers; the eye-sockets and the mouth are deep; the teeth are well indicated; the left ear is broken, the right entirely gone. The arms are closely appressed to the sides of the body, and the closed hands are raised to the chest, the palms facing outward. The shoulders, knees, and feet are continued as raised bands across the back of the amulet. The perforation for suspension is situated on a level with the mouth.

An amulet from Santo Domingo, of polished dark-brown stone, purchased from Archbishop Meriña, is shown in pl. LIII, 3-5. The

¹ In describing a most instructive effigy vase from Santo Domingo, Pinart comments on the large size of the legs, as follows: "*Ceci est curieux au plus haut degre car ces signes sont ceux tres caracteristiques de l'elephantiasis si commun dans les Indiens.*" Although the abnormal size of the legs is marked in the effigy vase which Pinart figures, as well as in a similar specimen of which I have photographs, it is questionable whether the maker of either specimen intended to represent a person afflicted with elephantiasis.

head is comparatively well cut, but the body and the limbs are more obscure. The back is flat, and holes for suspension are drilled at the edges.

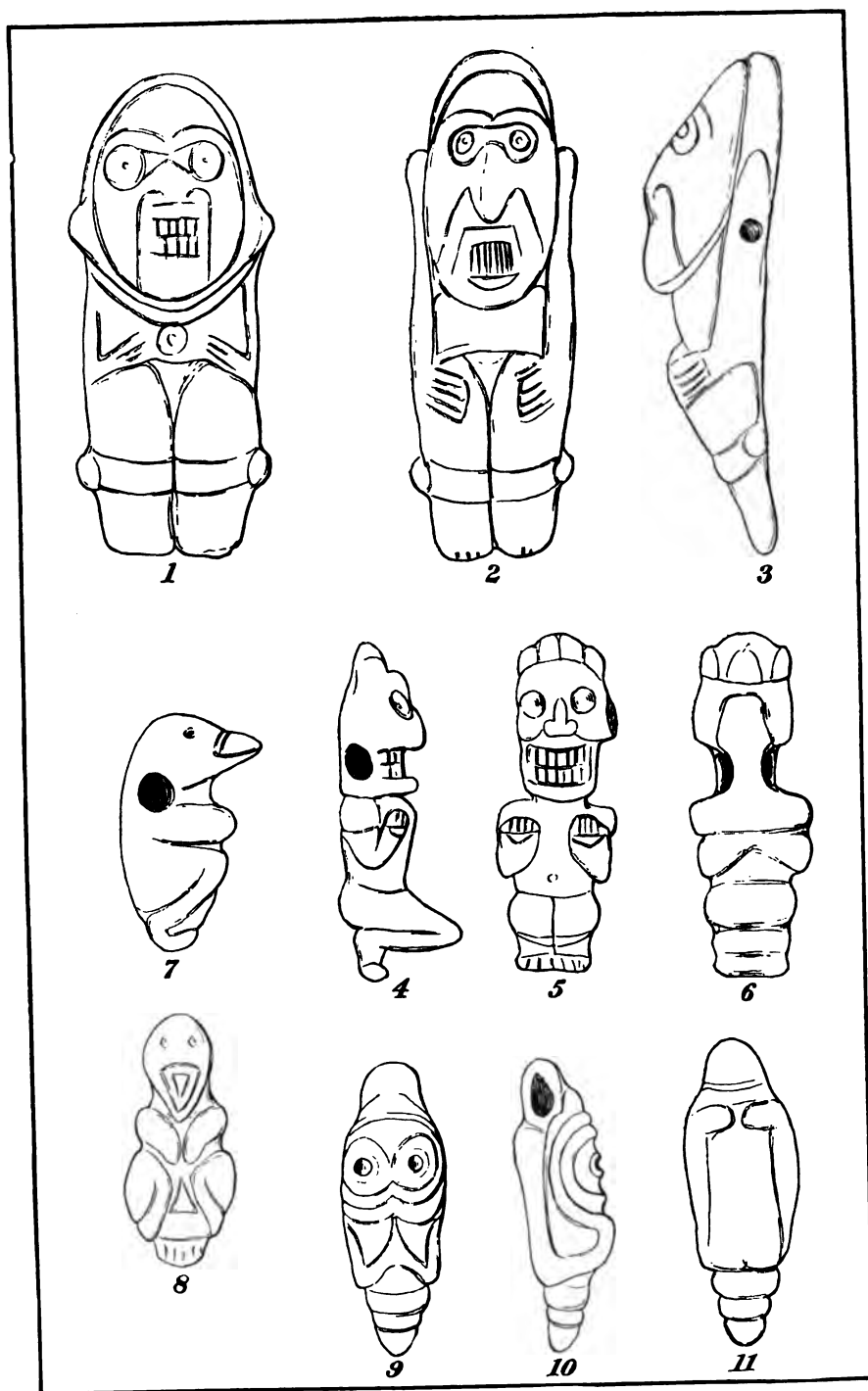
A smaller amulet of white stone (pl. LIII, 7, 8), also purchased from the Archbishop, has a well-formed head, with forehead flattened as was the Antillean custom. The arms and fingers are indicated by lines, not by relief work; the legs are divided merely by a median line, and a few indistinct scratches represent the toes. The back is smooth and slightly rounded. The perforation extends completely through the amulet from side to side, below the ears, having been drilled from each side until the holes met, but the union is not perfect.

A very rare form of amulet, representing twin figures united at the sides, was purchased from Archbishop Meriña of Santo Domingo.¹ The face, eyes, nose, and mouth of each of the two component images are well made, but there are only two ears instead of four. The fingers are indicated by incised markings on the abdomen, showing that the specimen belongs to the second type of amulets representing human forms. Although imperfectly indicated, the lower extremities bear marks representing bands with which, according to early writers, the Caribs were accustomed to bind the calves of their legs. There are two drilled perforations, one at the outer edge of each component figure. This amulet is similar in size and form to an "*amuleto para amor*" from Argentina described and figured by Ambrosetti.² Although this author does not give the locality from which the twin amulet noted by him was found, it probably came, like others he describes, from the Calchaqui region. His identification of twin amulets as representations of the Inca god Huacanqui, or Cayam Carumi, is supported by a quotation from Montesinos³ to the effect that the idol, or *guaca*, of lovers was "*una piedra o blanca, o negra, o parda liza, que hacen apariencias de dos personas que se abrazan.*" Although it closely resembles the Calchaqui specimen, there is no reason to suppose that the twin amulet from Santo Domingo bears any relation to the Incan idol.

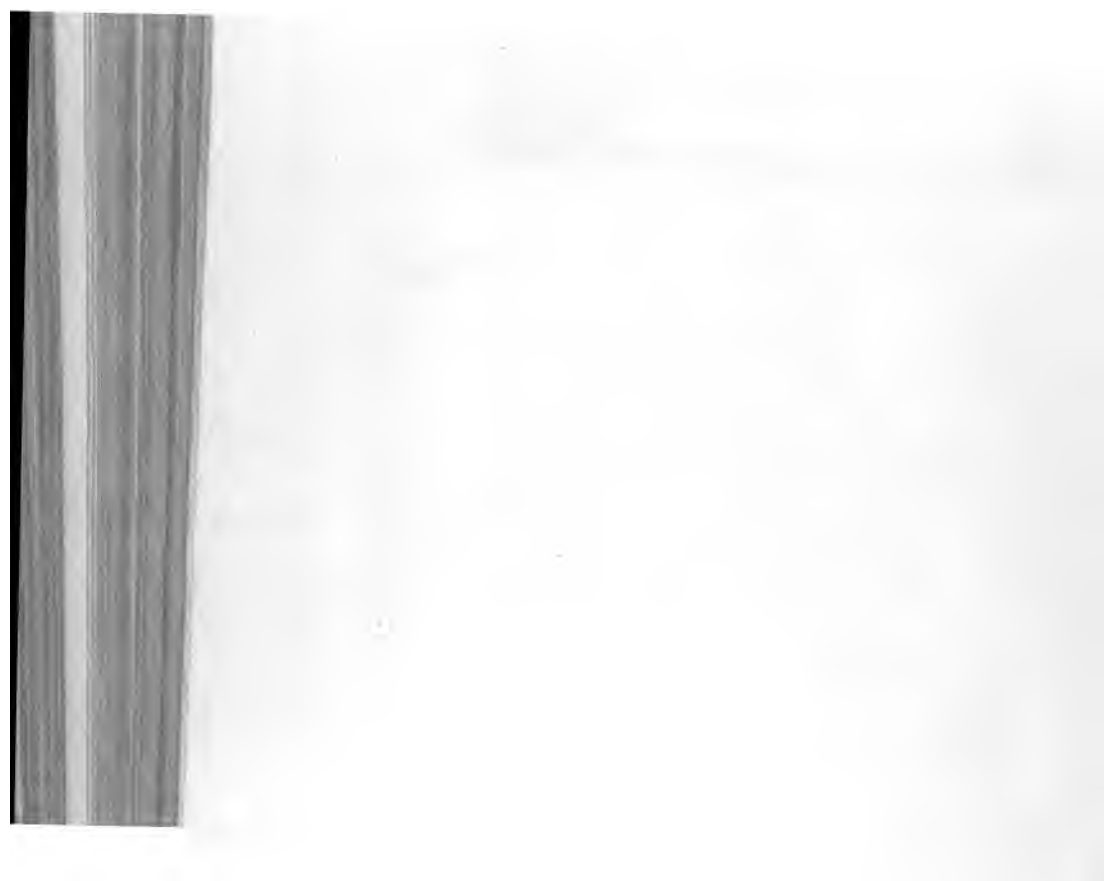
¹ See *Smithsonian Misc. Coll.*, vol. 45, pl. xxxviii, Washington, 1903.

² *Notas de Arqueología Calchaquí*, p. 33, Buenos Aires, 1899.

³ *Memorias Antiguas Historiales del Peru.*



AMULETS FROM SANTO DOMINGO



In addition to the two types of amulets in human form above considered, there occur in West Indian collections small perforated images of animals, including birds, reptiles, and frogs.¹

The only amulet of bird form here figured (pl. LIV, 7, 8), although I know of other specimens, belongs to Mr Hall of Puerto Plata, who has mounted the object as a watch-chain ornament. This specimen is finely made of dark brown or horn-colored stone, and measures an inch and a quarter in length. The beak is prominent, the wings are drawn to the breast, and the tail is marked with parallel lines indicating feathers. The perforation extends completely through the body at the level of the neck.

Another animal-shaped amulet (pl. LIV, 9-11), also owned by Mr Hall, is made of green stone; it is two inches long and is said to have been found in the Sierra del Serra, south of Santiago de los Caballeros. It is difficult in this specimen to recognize limbs, although the two appendages midway of its length may have been designed to represent flippers or fins. The two pits on one side were evidently intended for eyes. The general form of this amulet suggests an animal, and it may have been intended to represent a manatee or sea-cow.

Mention may here be made of two beautiful and unique amulets, one of shell and the other of bone, which were purchased in Santo Domingo from Archbishop Meriña.² The latter specimen is a complete image of human shape, while that made of shell is nondescript, having a highly conventionalized body without limbs and a realistically carved head.

It was my good fortune to see, in private collections, many amulets different in form from those here described and figured, an account of which would increase our knowledge of the variety of amulet forms from the West Indies. Among these may be mentioned two frog-shaped amulets of black stone in the excellent Nazario collection at Guayanilla, near Ponce, Porto Rico.

¹ It is difficult to tell whether some of these animals represent human beings or animals. For example, the body of the amulet shown in pl. LIII, 9, 10, has a distinctly human form, but the head is that of an animal. Mason's figure of the same specimen shows obscurely drawn arms on the side of the body, but I find no indication of such on the specimen itself.

² See Fewkes, Preliminary Report, in *Smithsonian Misc. Coll.*, vol. 45, pl. XLVIII, 1903.

While it is possible that some of the amulets above described may not have been bound to the foreheads of the natives, it is at least probable, as indicated by the perforations, that they were attached to or suspended from some part of the head or body. It is known that caciques wore on their breasts gold ornaments called *guanin*, since the custom is mentioned in an account of a battle with the Indians when Ponce shot a cacique (supposed to have been Aguebana II) thus adorned. As none of these gold objects escaped the rapacity of the early conquerors, and as no detailed description of them is known, it is impossible to say whether they were amulets as well as insignia of rank.

There is a striking similarity between some of the West Indian amulets and those found in Mexico. As a rule those from the Antilles are not so characteristic in shape and are not so well made as those from the mainland of Central America. We should expect to find a wider distribution of these small objects than of the larger idols, from the fact that they are more easily transported; but this distribution is not necessarily indicative of racial kinship of the owners of these objects. The similarity between Antillean and South American amulets is marked, but I find no resemblance between those from Porto Rico and from the mainland north of Mexico.

The objects described in the preceding pages are supposed to be identical with the small idols called *zemis* by early writers, who declare that the natives bound them to their foreheads when they went to war. A reference to Roman Pane's statement that the islanders wore *zemis* in this manner has already been made. Peter Martyr¹ describes certain idols used by the people of Hispaniola in their worship, which were undoubtedly amulets. He says: "These images the inhabitantes call *zemis*, whereof the leaste, made to the likenesse of young devilles, they bind to their foreheades when they goe to the warres against their enemies." Francisco Lopez de Gomara,² in describing the customs of the Indians of Hispaniola, says: "*Atanse a la frente Idolos chiquitos quando quieren pelear.*" (They bind little idols to their foreheads when they wish to fight.)

¹ Dec. 1, lib. IX, pp. 50-54.

² *Historia de las Indias*, p. 24, Antwerp, 1554.

Similar statements made by other writers in the early half of the sixteenth century are frequently quoted in more modern works.

The difference in the forms of these amulets might have been due to the desire to indicate, by them, the clans of the wearers, were it not for the fact that the images are so small and consequently inconspicuous that they would have been useless for such a purpose ; but it is quite probable that the custom of painting the zemi or totem on the body was with this intention.¹ It is much more probable that the frontal amulets were regarded as efficacious against occult evil influences, the owner relying for protection on their magic power, in which respect they resemble all amulets. Their attachment to the forehead naturally suggests the phylacteries of the Jews.

It is probable that, in addition to the amulets which the Caribs and the Antilleans bound on their foreheads when they went to war, these people had numerous other amulets, some of which were worn on the neck or on other parts of the body or limbs. Those here considered have the form of small idols and were designed as pendants, but the aborigines also had other objects which were not suspended from the body, although likewise used as protective charms.²

Roman Pane has given a full account of the usages of the medicine men, or *boii*, of the islanders, which is interesting in this connection. From his description, which accords in general with primitive medicinal practices among other tribes, I will quote that portion which bears directly on the way in which a stone object, later used as a fetish, was presumably taken from the patient :³

“The *boii* having purged himself and taken his own drug (a custom not recommended to the modern physician), rises and goes to the sick man, . . . takes him by the legs, feels his thighs, descending by degrees to his feet, then draws hard as if he would pull something off ; then he

¹ I have been informed that the country people at Boya, the old pueblo in Santo Domingo where the Indians under Henriquillo were settled, “sometimes paint designs on their faces in red as the Indians used to do.”

² Im Thurn speaks of the natives of Guiana carrying worn stones to which they ascribe occult powers. There are innumerable other instances of this general custom among different races which may be explained on the theory of a belief in their efficacy against evil influences or practices.

³ This translation is taken from H. Ling Roth, *Journ. Anth. Inst. of Great Britain*, vol. xvi, pp. 254-255.

goes to the door, shuts it, and says, 'begone to the mountain or to the sea or whither thou wilt,' and giving a blast as if he blowed something away, turns about, clasps his hands together, shuts his mouth, his hands quake as if he were a cold, he blows on his hand, and then draws in his blast as if sucking the marrow of a bone, sucks the man's neck, stomach, shoulders, jaws, breast, belly and several other parts of his body. This done, they begin to cough and make faces, as if they had eaten some bitter thing, and the doctor pulls out that we have said he put into his mouth at home or by the way, whether stone, flesh or bone . . . 'if it be a stone,' he says, 'keep it safe.' Sometimes they take it for certain that these stones are good, and help women in labor whereupon they keep them carefully wrapped up in cotton, putting them into little baskets, giving them such as they themselves eat, and the same they do to the *zemis* they have in their homes."¹

Many instances of the use of charms and amulets still survive in the practices of the negro "conjure-men" of Porto Rico, but it is difficult to distinguish those of Indian from those of African descent. Of these charms several might be mentioned, thus the *uña de la gran bestia*, or "nail of the great beast,"² is ordinarily tied in a packet of tinfoil, wrapped in cloth, and worn about the neck by the negroes as a protection. Among Porto Rican peons Indian stone celts are called *pedras de rayo*, or thunder-stones, and are used to cure certain diseases—a usage which may have been perpetuated from prehistoric times when strangely shaped stones were kept as fetishes or were used by the medicine-men for the same purpose.

In the same category, and of the same doubtful origin, may be mentioned the so-called "*collar hechecero*," or wizard collar, which can be purchased from conjurors, or, I am told, from certain dealers in obscure places in Porto Rico. These collars consist of strings or pieces of tape as long as a man's spine, with knots tied at intervals, the number of which equals that of the ribs or the vertebræ. Through each of these knots are stuck two pins in the form of a

¹ "Feeding" of fetishes and other images is a common practice among primitive idolators, and almost every special student might give instances of the usage among tribes which he has studied. The Hopi, for instance, put food to the mouths of their stone idols.

² According to Gumilla (*El Orinoco ilustrado*, I, p. 300) among the Achaquas of the Orinoco *la gran bestia* is the tapir. Its hoof (*uña*) was regarded as efficacious in curing the *gota coral* (falling sickness) and was tied about the neck of the sufferer for that purpose.

cross.¹ This collar is believed to have the power of causing or of averting harm at the will of the owner.

When the practices of the West Indian "conjure-man" are studied, it will doubtless be found that he still preserves the same general methods as the ancient *boii*, or aboriginal West Indian sorcerer, having merely modified the usages of the latter or replaced them with others, equally primitive, which his slave ancestors brought from Africa. To what extent the West Indian conjure-man of to-day has been influenced by aboriginal sorcery is not now known, but the subject is well worthy of study, and a rich field for research awaits the folklorist in Santo Domingo and Porto Rico.

Each amulet above described was doubtless employed, as were other fetishes, for its own particular magic power. Some of them, no doubt, were regarded as efficacious in protecting the wearer from death or disease, others were believed to cause the crops to grow or the rain to fall, while still others were used to aid women in childbirth. The form of fetish specially adapted for each of these or a hundred other needs is unknown, as no writer contemporary with their use has enlightened us in that regard; but it is not beyond the range of possibility that there may still survive among the Arawak tribes of South America information which will aid in their interpretation, and indeed it is possible that like amulets have not wholly passed out of use in the little known interior of Santo Domingo.

The number of amulets herein described and figured is considerable compared with the many which renewed research will doubtless bring to light, and it is hoped that this article, incomplete though it is, may aid others in making more of these interesting objects known to science.

¹ It is said that the country people of the island sometimes embroider a cross on the shirt or undergarment of *novias*, or brides, to ensure constancy. I mention these customs, not because they are Indian survivals, but as practices still in vogue which may be aboriginal.

BOOK REVIEWS

Zur Nephritfrage (Neu Guinea, Jordansmühl u. a., Alpen, Bibliographisches). Von DR. A. B. MEYER, *Direktor des Museums*. (Abhandlungen und Berichte des Königlichen Zoologischen und Anthropologisch-Ethnographischen Museums zu Dresden, Bd. X, No. 4. Berlin: R. Friedlander & Sohn. 1903. Folio, 32 pp., 2 pl.

This thorough yet concise résumé of the discoveries relating to and the publications on jade since 1891 is the most important contribution to the subject that has appeared during the last decade. It is a continuation of the two volumes prepared by Dr Meyer and published by the Royal Saxon Museum in the year mentioned, and with them forms a noteworthy account of the history, technology, and archeology of jade and allied minerals so far as present knowledge goes. Dr Meyer has published in all no fewer than thirty-six articles on the general subject, and, as is well known, has clearly shown that the subject is a chemical rather than an ethnological problem.

Three distinct regions have furnished most of the material discussed in the present memoir:

First. The Humboldt bay, Astrolabe bay, Saddle mountain, and Collingwood sound districts of New Guinea. A full discussion of the nephrite from this general area is given, and attention is called to the use of the material from this section for implements, notably axes, several of which are illustrated. A remarkable flat ring, four inches in diameter, recalling some peculiar Chinese forms, is also described and figured.

Second. The Jordansmühl locality in Silesia, in which Kunz discovered *in situ* the mass of nephrite, weighing 4817 pounds, now in the Bishop collection. The occurrence also in this vicinity of nephrite bowlders and the finding of flat jadeite axes are fully discussed, as are the frequent misstatements that have been made regarding transportation of jade, nephrite, and chloromelanite by tribal wanderers and its influence on the distribution of adzes of those materials. Dr Meyer concludes that the value which such objects are supposed to have had among prehistoric peoples is overestimated.

Third. The occurrence of jadeite, nephrite, and chloromelanite in other localities is discussed at length. The discoveries noted included

those of nephrite pebbles in the river Sann, at Cilli, Styria; from the Mur in the vicinity of Graz, and at other points in Austria; those at Monte Viso, at Lake Geneva, at Saint Marcel in Piedmont, and in the Val d'Aosta (which last have been shown to be jadeite). The jadeite pyroxene from Piedmont; a rough mineralogical specimen from the Rivoli in Piedmont, at the entrance of the Val d'Aosta; and Heierli's discovery of nephrite and saussurite in pebbles as well as in the rock in place in Canton Wallis in the central Alps, are also noted. In view of these and other well-defined European occurrences, Dr Meyer asks, "What shall one say, when, as late as 1902, an author who has given much attention to the whole nephrite subject can write: 'The question is still unsolved whether the nephrite objects found in the pile dwellings of Lake Constance (which would require tools and considerable skill to make) have come from distant Asia (China, Tibet, and Turkestan), or, as many believe, owe their origin to the Swiss Alps. It is left for the further solution of the nephrite question to be determined whether the inhabitants of the lake dwellings — perhaps before their migration from Asia — possessed the knowledge and the use of nephrite and brought the latter to Europe, or whether it was obtained through importation.'"

K.

Die Anmut des Frauenleibes. Von FRIEDRICH S. KRAUSS. Leipzig: Adolph Schumann. 1903. 4°, 20 parts, 16 pp. ea.

Ein Geniestreich. Volkstück in fünf Aufzügen oder neun Bildern. Von MILOVAN GJ. GLIŠIĆ. Deutsch von FRIEDRICH S. KRAUSS. *Mit echten serbischen Sang- und zigeunerischen Spielweisen* von VLADIMIR R. GJORGJEVIĆ. Leipzig: Adolph Schumann. 1903. 8°, xxii, 192 pp., 2 portraits, 7 melodies.

Künstlerblut! Ein Schauspiel in vier Aufzügen. Von FRIEDRICH S. KRAUSS und LEO NORBERG. Leipzig: Adolph Schumann. 1903. 8°, 6 + 152 pp.

Owing to the unprecedented success of his *Streifzüge im Reiche der Frauenschönheit* (previously reviewed in these pages), Dr Friedrich S. Krauss has begun the publication of a second series on similar lines under the first title above given. Although dealing more directly with the physical side of the subject, the general treatment is the same. Five numbers have already been issued from the publishing house of Adolph Schumann in Leipzig. In paper, typography, and illustration it is fully up to the standard set by the earlier work.

As the second of his series of "Servian Masterworks" the Doctor

gives us *Ein Geniestreich*, a German translation of a five-act comedy by Milovan Glišić, one of the most important of the writers who are creating a new national literature for a new Serbia. Born of village parents in the revolutionary year of 1848 and educated in the local schools and the University of Belgrade, Glišić for nearly thirty years has been officially identified with the literary life of the country, in connection with the National Library, National Printing Office, and Royal National Theater in Belgrade, and as editor of "New Serbia." A master of four languages, he has established his reputation as a translator as well as an original author. The drama itself is a picture of modern Servian society of town and country, with officials, servants, peasants, soldiers, and a band of gypsy musicians to make up the picture. A number of songs are introduced, including several characteristic gypsy melodies, the arrangement being by Gjorgjević, the leading authority on Servian folk-music.

In *Künstlerblut* we have another evidence of the facility with which the Doctor can turn from scientific work to lighter literature. It is a four-act drama, the joint production of Krauss and Leo Norberg, the Austrian novelist. The scene is laid in Vienna, and the story deals with the fortunes of an architect unhappily mated to a woman whose affections he has lost, proceeding steadily to the inevitable tragedy.

JAMES MOONEY.

Queries in Ethnography. By ALBERT THEOBERT KELLER. New York, London, and Bombay: Longmans, Green & Co. 1903. 12°, 77 pp.

This neat little handbook is, as its name imports, a collection of 912 questions in ethnography. The last named term is employed in its correct sense to cover the first step in ethnological studies concerning any people. Physical anthropology is omitted, observers therein requiring special training. The queries are grouped under the following heads: Maintenance, Perpetuation, Gratification, Religious and Superstitious Ideas and Usages, the Societal System, Contact and Modification. The author states that the book is designed neither for the expert nor the wholly un instructed, but for students and missionaries who propose to travel in remote foreign parts. The expert, however, will find the book most suggestive in questions that he has overlooked, and intelligent travelers have many a time longed for a guide of this kind. It is a common experience of museum curators to have friends return from interesting and rarely-visited regions saying, "If I had only known what you wished me to observe."

O. T. MASON.

Der diluviale Mensch in Europa. Die Kulturstufen der ältesten Steinzeit. Von DR MORIZ HOERNES, *Professor der prähistorischen Archäologie an der k.k. Universität zu Wien. Mit zahlreichen in den Text eingedruckten Abbildungen.* Braunschweig: Friedrich Vieweg und Sohn. 1903. 4°, xiv, 227 pp.

Professor Hoernes' latest book is in two parts. The first is devoted to the paleolithic history of western Europe; in it the older systems of chronology, especially those of de Mortillet and Piette, are utilized, so far as the materials prove satisfactory, to build up a new one. The second part is an application of the new system to all the paleolithic evidence thus far gleaned within the empire of Austria-Hungary.

Much has been written on the subject of Diluvial Man in Europe; and yet few writers have attempted to cover the whole of the period, and, at the same time, the whole of Europe. The reasons are not far to seek. The subject is not only large geographically, but also chronologically. To compass it requires the combined knowledge of the geologist and paleontologist, archeologist and technologist; the harmonious working together of one branch of science with another; of nation with nation. With international good-will and coöperation, with a better knowledge of the Quaternary, which is, perhaps, still the least thoroughly understood of all geologic epochs, and with painstaking accumulation and coördination of data, this many-sided problem may yet be solved.

Several attempts have already been made to establish a relative chronology for the period in question, the best known being that of Gabriel de Mortillet.¹ The main outlines of the de Mortillet system were traced as early as 1869,² and his divisions were based on the character of the industrial remains found by Lartet and Christy in the caverns and rock-shelters of the Vézère. De Mortillet gave to each of his epochs the name of a well known and typical locality. The stations chosen to represent his four subdivisions, beginning with the oldest, were: Le Moustier (Dordogne), Solutré (Saône-et-Loire), Aurignac (Haute Garonne), and La Madeleine (Dordogne).

De Mortillet's second attempt at a classification was in 1872,³ when he changed his chronological table to the extent of creating a new "époque de St Acheul" and discarding that of "Aurignac." Though still following the archeological method, he recognized the importance of cor-

¹ *Science*, N. S., vol. XIII, pp. 343-345, March 1, 1901.

² *Compte-Rendu de l'Acad. des Sciences de Paris*, LXVIII, 553.

³ *Compte-Rendu Congr Intern. d'Anthr. et d'Archéol. Préh.*, Bruxelles, p. 432.

relating geological, meteorological, and paleontological phenomena in his new system.

Others had attempted chronologies based on the fauna. Lartet's three epochs were characterized by the Cave Bear, Mammoth, and Reindeer, respectively. His system was, in turn, modified by both Hamy and Boyd-Dawkins. Dupont of Brussels reduced the number of epochs to two: (1) Cave Bear and Mammoth, and (2) Reindeer.

In 1883¹ de Mortillet changed the name of his first epoch from Acheulian to Chellean. His system of chronology was still further extended and modified eleven years later,² and, in the third edition of *Le Préhistorique*,³ which appeared in 1900, it took final shape: Chellean, Acheulian (transition), Mousterian, Solutréan, and Tourassian.

Hoernes declares the evidence to be against de Mortillet's sharp separation of the Mousterian from the Chellean, a separation accentuated by the intercalation of a transition epoch, the Acheulian. He suggests a reduction of the number of epochs to: (1) Chelléo-Mousterian, (2) Solutréan, (3) Magdalenian, followed by the Tourassian. A long series of stations are cited to prove that the occurrence of Chellean, Acheulian, and Mousterian types in the same deposits is the rule and not the exception. De Mortillet acknowledged the fact of such a mixture but explained it on the theory of "*remaniement*" and the overlapping of industries.

The continuity of paleolithic occupancy of France was luckily not disturbed by the glaciers. The conditions were different in England, Germany, Belgium, and Switzerland, where human occupancy was confined to interglacial epochs. Hoernes places the Chelléo-Mousterian after the first glacial epoch (Pliocene); the Solutréan after the second, and the Magdalenian and Tourassian after the third; while the Arisian epoch of southern France was synchronous with the fourth glacial epoch.

The author's Solutréan epoch corresponds in part to de Mortillet's, and in part to the first epoch of Piette's glyptic period. The laurel-leaf point and the point with lateral notch at the base are looked upon as being too rare to be characteristic of the epoch; besides they occur in the later epochs. Another argument for combining Chellean and Mousterian is found in the development of the amygdaloid type into the beautiful laurel-leaf point, an evolution already pointed out by both Dupont and Reinach.

¹ *Le Préhistorique Origine et Antiquité de l'Homme*, Paris.

² *Classification Paléolithique*, Bull. Soc. d'Anthr. de Paris, 1894, 616

³ Page 597.

The Solutréan is sufficiently characterized from the view-point of art and industry. As an epoch it is destined to growing importance due to the recent discovery in the Baoussé-Roussé caverns, near Mentone, of a negroid human type. This race is looked upon as the author of the so-called Solutréan industry and the sculptor of the steatopygic and other figures found in the caverns of southern France, particularly Brassempouy. Considerable space is devoted to the recent remarkable discoveries of paleolithic mural decorations. The first of these, found in Spain twenty-three years ago by Sautuola was not taken seriously, and little more was heard on the subject till Émile-Rivière's discovery, in 1895, of engravings on the walls of the grotto de la Mouthe (Dordogne). Since then abundant confirmatory evidence has been gathered from other Dordogne caverns, notably Combarelles, Fond de Gaume, and Bernifal.

A study of the animals represented, and of the technique, makes it possible to fix a date for both the paintings and the engravings. The latter abound in the caverns of Pair-non-Pair (Gironde), Chabot (Gard), and Combarelles, all of which are referred to the Solutréan epoch. On the other hand, the combined frescoes and engravings which characterize the caverns of Altamira (Spain), la Mouthe, and Fond de Gaume, belong to the Magdalenian epoch.

The Magdalenian epoch of Hoernes is the same as the second half of Piette's glyptic period, *i. e.*, the reindeer epoch. It does not differ much from the Magdalenian of de Mortillet, an epoch characterized by cold, dry climate, cavern frescoes, and engravings on bone, horn, etc. As an epoch its industry is widely distributed over Europe, the principal stations being caverns or rock-shelters.

The physical characters of the Magdalenian race are fairly well known from the remains found at Crô-Magnon, Laugerie-Basse, and Chancelade; so that a human type is found for each of the three diluvial epochs: the Spy or Neanderthal for the Chelléo-Mousterian; the Grimaldi, negroid type, for the Solutréan; and the Laugeriean for the Magdalenian. The author is in practical accord with de Mortillet relative to the estimated lapse of time since the close of the Magdalenian epoch, both placing it at about ten thousand years.

The hiatus between the paleolithic and neolithic periods, about which so much has been written, is thoroughly discussed. Piette's Asylian epoch, which is thought by many to fill the gap, is treated rather as a closing phase of the paleolithic than as an actual transition epoch. In this respect the author agrees with de Mortillet whose Tourassian epoch corresponds to Piette's Asylian.

The Campignian fits better the requirements of a transition epoch; but it, as well as the Tardenoisian of A. de Mortillet, should be treated rather in connection with the neolithic period.

Part II is a constructive piece of work of prime importance to all students of diluvial man, built up as it is from materials not well enough known outside of Austria-Hungary, and is best characterized in the words of the author's preface: "Die Darstellung ist im zweiten Teile ausführlicher als im ersten und berücksichtigt alle einschlägige Fundorte, da bisher noch keine zusammenfassende und vergleichende Behandlung, beziehungsweise kein System der paläolithischen Altertümer Österreich-Ungarns existierte. Eine solche wird hier zum ersten Male geboten und soll in erster Linie den westeuropäischen Diluvialforschern genauere Kenntnis des donauländischen Fundgebietes vermitteln." Facts are gleaned from a thorough study, detailed and comparative, of all the discoveries, with the result that the various stations may be assigned to their respective chronological epochs. It is found that the Chelléo-Mousterian has the smallest representation, the principal stations being Čertova díra and Šipka in Moravia, and Krapina in Croatia. Solutréan industry has been found in many places, notably along the north bank of the Danube some distance above Vienna, at Krems, Zeiselberg, Willendorf, Aggsbach; also in Bohemia at Lubna and Jenerálka; in Moravia at Joslowitz, Brünn, and Předmost, and in Hungary at Miskolcz. These finds are chiefly from the loess, while the Magdalenian industry of the following epoch comes from the caverns. Of the latter, one station is near Krems, another near Prague (Libotz), and seven in Moravia.

An appendix of thirty-two pages, in which fourteen different topics of current interest are discussed, is a striking commentary on the rapidity with which new prehistoric problems are presenting themselves. Here, as usual, the author leaves no doubt as to where he stands in regard to certain disputed questions. For example, he refers the human remains found at Brünn to the Solutréan or Magdalenian epoch instead of to the neolithic period. He does not accept the so-called eoliths as being in the nature of artifacts; and, in the reviewer's opinion, very much underestimates the value and significance of Rutot's contributions to the knowledge of diluvial man in Europe, especially in Belgium.

The volume is provided with an index of names, and references to the literature are to be found on almost every page. The numerous illustrations are chosen with care and are well executed. A slight error, however, is noted on page 15 (fig. 2), where the station of la Micoque is referred to as a cavern. It is, on the contrary, a station "unter freiem

Himmel" on the southern slope of a hill about half-way from its summit.

Professor Hoernes is to be congratulated on the measure of success attending his latest effort to place prehistoric archeology on a truly scientific footing.

GEORGE GRANT MACCURDY.

Annual Archaeological Report. 1902. By DAVID BOYLE. *Being part of Appendix to the Report of the Minister of Education, Ontario.* Toronto: L. K. Cameron. 1903. 8°, 186 pp., ill.

This report by Dr Boyle is of more than usual interest. In addition to the list of accessions to the Provincial Museum, which amounted to more than nineteen hundred in 1902, it contains notes on the more important specimens, accounts of the discovery of three ossuaries, an article on stone effigy pipes, and notes on the archeology of North Victoria, Blenheim township, and other localities.

One of the most interesting articles of the Report is on the identification, by Rev. A. E. Jones, of the site of the old Huron village of Saint Ignace, where Brebeuf and Lalemant were so cruelly tortured to death, March 16-17, 1649. Every additional fact regarding the commencement of the destruction of the Huron organization by their implacable enemies, the Iroquois, is important in making up the history of the early period of the French dominion in Canada. This identification is based not only on the historical data and topography, but also on a careful study of other neighboring village sites with regard to their position in reference to Saint Ignace. This relation is shown by maps introduced in the article.

The "Notes on Sites of Huron Villages in the Township of Oro, Simco county, Ontario," by Andrew F. Hunter, are along the same line. The author remarks that this is the fourth report "in a series intended to cover the district once occupied by the Hurons, the townships of Tiny, Tay, and Medonte having successively formed the subjects of preceding reports. When collected they form a connected story of some portion of the remains of this remarkable nation of aborigines, unique in mortuary practices," etc.

The report closes appropriately with an obituary of Major John Wesley Powell, in which his valuable work in the geological and ethnological fields is duly appreciated.

We may be permitted to suggest to the Canadian archeologists that a great help to investigators who enter the field hereafter would be a list of and a map on a liberal scale showing the locations of antiquities in Canada.

CYRUS THOMAS.

This is a model of intensive ethnographic studies of value possible. The shores and islands of southeastern Alaska linguistic family of Powell. Lieutenant F of their culture during fifteen years and result of his investigations into their language by the Tlingit, but they are masters of travel to the root of the spruce (*Picea sitchensis*). what is called "false embroidery," with *nervata*, *Calamagrostis langsдорffii*, *Desch.* *Bromus sitchensis*, and *Elymus mollis*), stems (*Adiantum*) and root-stocks of *Eq*

The author discovers six styles of mixed with checker or wicker, diagonal crossed warp, three-strand weave, and colors. Moreover, the herring-bone we of fish traps.

The border of a basket is its life, say pass all others in this feature. There are many different ways of making the border. In the first place, the cut-off warp and the turned-down warp are these Indian women use two-strand twine in front of the other. Thus they secure a strong border. Emmons describes thirteen borders: (1) of weaving, (2) three-strand twine, (3) four-strand twine, (4) last rows with false embroidery held by two-strand twine, (5) four-strand twine, (6) four-strand twine, (7) warp turned down and held by three-strand twine, (8) the warp turned down, (9) warp turned down and held by three-strand twine, (10) warp turned down and held by three-strand twine, (11) a four-strand twine, (12) four-strand sennit held by two-strand twine, (13) wall of twine often enclosing a stout hoop. In the best of the border the warp is cut off for half an inch so that the

There are twenty-three basket forms, each having a separate name from its function in domestic economy or in ceremony.

Ornamentation in Tlingit basketry is effected by weaving, by painting, and by added objects. The designs when painted are free-hand, but when woven in are delightfully conventionalized. It is suggested that the absence of totemism in the basket designs points to the origin of this art in the porcupine quill work of the inland Athapascan tribes. It will be found, however, on reading Lieutenant Emmons' monograph that the lore of the Tlingit is hiding in the decoration. The woodworm track, the lightning, the butterfly, shark's tooth, bear's track, arrow feather, fire weed, rainbow, shadow of a tree, raven's hood, salmon berry, tattoo marks, shaman's hat, waves, geese flying, and many more have vastly different inclusions in a Tlingit woman's mind. Fifty-one separate designs are worked out and named, so that any one having a collection of Tlingit basketry will have no difficulty in understanding the symbolism. The plates further show forms, uses, and symbols in combination.

O. T. MASON.

Résumé de l'ouvrage sur les modifications de l'organisme pendant la période de la puberté de 10 à 20 ans . . . Par le Prince N. W. VIASEMSKY.
Paris: L. Maretheux. 1902. 15 pp.

This is a brief résumé, containing only general arguments and conclusions (no statistics or tables), of Prince Viasemsky's extensive work in Russian, *Ismenienia organizma v periode sformirovaniia*. The original monograph, with 278 tables and 43 diagrams, treats in detail of the results of the investigation of 4872 children between ten and twenty years of age in the schools of St Petersburg. The physical data were obtained from 2177 boys, the psychic from 892 girls and 342 boys, the pathological from 1461 boys. The influences of race, social status, school, heredity, stature, general physical constitution, intellectual development, conduct, cephalic index, blond and brunet types, etc., are considered. The principal conclusions reached are: School attendance influences early childhood favorably, but is pernicious at a later age. It helps the weak, but exercises no influence upon the bodily evolution of the robust. The less endowed intellectually excel those better endowed in physical development. The growth of the body is more regular with "good" than with "bad" pupils. Tall individuals develop sooner than short. Brachycephalic individuals have less increase in growth of body than dolichocephalic, but the growth of the latter is more energetic (and sooner ended). Blondes have a longer period of evolution of the organ-

ism than brunets. Among the factors that accelerate puberty are: Warm climate and high temperature, favorable conditions of existence, good and abundant food, too warm clothing, too soft beds and furniture, too warm rooms, etc. It appears sooner in the city than in the country, in the well-to-do than in the poor, in the plain than in the mountain, in the short than in the tall, in the robust than in the weak, in the bright than in the dull, in "good" than in "bad" pupils, in brunets than in blonds, in the nervous and excitable than in the calm and lymphatic.

Puberty in general is immediately preceded by a general condition of the organism making it less fit for physical and intellectual work. School retards puberty and its onset is marked by a diminution of good conduct. Curricula for boys 14-16 years of age and girls 12-14 should be reduced to a minimum; both before and after puberty the cerebral activity of the organism and its physical resistance are lowered. At puberty all the organs are increased in their activities and the organism augments in all its dimensions. The true physical and intellectual type of man acquires his definite traits only after the pubertal period. Prince Viasemsky's work is important for both anthropologists and psychologists.

ALEXANDER F. CHAMBERLAIN.

Die Ekstase in ihrer kulturellen Bedeutung. Von Professor Dr THOMAS ACHELIS. Berlin: Rade. 1902. 226 pp.

This book, which is the initial volume of the series *Kulturprobleme der Gegenwart*, edited by Leo Berg, contains six chapters: Origins of ecstasy, ethnographic and culture-historical survey, the psychological basis and significance of ecstasy and similar phenomena (ecstasy; somnambulism, visions, hallucinations; dance; hypnosis), the social significance of ecstasy, the ethical significance of ecstasy, the significance of ecstasy for art. The author is founder and editor of the *Archiv für Religionswissenschaft* and one of the best equipped of German ethnologists. The style is pleasing and the subject sympathetically treated.

Widespread in all ages and among all peoples has been the effort to rise by some means above the mere everyday level. This common human longing has often employed very material and dangerous things to this end. The *materia extatica* of mankind is legion, the Polynesian kava, the American tobacco and peyote, the Oriental hashish, the wine of the Mediterranean, the beer of central and northern Europe, the Hindu soma, southern Asiatic opium, the alcohol and other drugs of modern civilized races, are but a few of them. Subtler ways (cruel enough sometimes) of producing ecstasy have been or are now in vogue, such as the

dance, hypnosis, fasting, penance and chastisement, vows, and kindred practices of all sorts. At certain epochs in the Orient and in the Occident the world has pullulated with artificially made ecstasies, from harmless quietists to howling dervishes. Russia has even now her epidemics of ecstasy. The ghost-dance of the Plains Indians has fellows all over the globe. The ecstasy of the word begins in the hoary chronicles of Egypt and is scarcely dead anywhere. The soul-moving *raptus* and not the measured *ordo* makes history now as ever. Ecstasy is the *sine qua non* of the societies of war and of peace. It is the very life of education. Art scarcely exists except through it, and without it religion dies. In the name of ecstasy innumerable crimes have been committed, but, like liberty, it is indispensable to man. The trail of the serpent is over many of its deeds, and brutality and immorality have often been its handmaids. But we must agree with Dr Achelis when he says (p. 236): "In spite of all aberrations ecstasy has led human beings to the noblest and highest cultural properties and ideals, which the commonplace limited *niveau* would never have been able to produce." Through real ecstasy, to the lasting benefit of the race, we are more of ourselves than else were possible. To the psychologist and the anthropologist this book should be very welcome. It is a charming discussion of that "art" by which some of our kind succeed in falling lower than the beasts, and others in becoming as the gods themselves. ALEXANDER F. CHAMBERLAIN.

A New Voyage and Description of the Isthmus of America. By LIONEL WAFER. *Reprinted from the Original Edition of 1699.* Edited by GEORGE PARKER WINSHIP, *Librarian of the John Carter Brown Library.* Cleveland: The Burrows Brothers Company, 1903. 8°, 212 pp., ill.

The original edition of Wafer's *New Voyage* is so scarce that students of the history of the buccaneers and of the native inhabitants of the Panama country have hitherto had little opportunity of consulting it, hence this verbatim reprint, with an excellent introduction and many notes, is a welcome addition to the available sources of information on these topics.

By reason of his knowledge of surgery and physic, Wafer was enabled to ingratiate himself with the aborigines among whom he was thrown on various occasions while an active spirit in the not altogether gentle profession of buccaneering, particularly during the early part of 1681 when, owing to a mishap which caused him to be left behind, he came in intimate contact with a friendly body of the savages. This circumstance gave

the author unusual opportunity for observation, and the considerable information regarding the aboriginal life which his record contains indicates that he made good use of his facilities and his faculties; for in addition to the incidental allusions to the Indians and their customs throughout, an entire chapter (pp. 131-172 of the reprint) treats "Of the Indian Inhabitants; their Manners, Customs, etc." Herein lies the great value of the book to the student of American ethnology.

The physical character of the Darien natives of the period is quite minutely described. The men were tall, well formed, and active, according to Wafer, who remarks that he "never saw among them a crooked or deformed person." The women were short and thick, the young women "very plump and fat, well-shap'd; and have a brisk eye." Hair dressing is treated in detail. It was the custom of the women to eradicate the hair of the men (save that of the head and the eyes) by means of two little sticks used as tweezers. "But the men upon some occasions cut off the hair even of their heads . . . by way of triumph, and as a distinguishing mark of honor to him who has killed a Spaniard, or other enemy." The warrior then also paints himself black, continuing in this somber state until the next full moon.

Instances of albinism are recorded, notable chiefly for the high proportion of cases prevailing — "one to two or three hundred." (The Zuffis of New Mexico, who numbered about 1600 in 1888, had eight albinos among them — an equally high proportion.) These curious people, who were regarded as "somewhat monstrous" by the others, were "beset all over, more or less, with a fine short milk-white down, which adds to the whiteness of their skins." This abnormality was caused, the Indians thought, by the mother "looking on the moon at the time of conception."

Body-painting was engaged in to a large extent, the women being the artists and animate objects forming the favorite themes. One in forty of the men was tattooed. The men usually went entirely naked, while the women wore a clout or short kilt; yet, as is generally the case with children of nature, they were "both a modest and a cleanly people." While at ceremonial feasts or in council the men always wore a crescentic plate or disk of gold or silver attached to the septum and hanging over the mouth, although while actually eating the plate was removed. On ordinary occasions the disk was not so large, and was not removed during meals. The women wore a ring in the same manner, the metal, like that employed by the men, varying with rank or with the occasion. The head-men sometimes wore two immense gold plates suspended from each ear, while the

chief in council wore "a diadem of gold-plate, like a band about his head, eight or nine inches broad, jagged at top like the teeth of a saw, and lined on the inside with a network of small canes." Thus in detail does the author describe the various treasured ornaments of these Indians, many of which must have been remarkable in the extreme.

It is not possible to do more than barely to enumerate the subjects of ethnologic interest described by Wafer, all of which are recorded with more or less fulness. Their houses (of jacal and usually isolated), fortifications or "war-houses," plantations and husbandry are described. Maize was the staple product, and from it they brewed a drink which was very intoxicating. They made also a drink called *mislaw* from plantains, both ripe and dried. Yams and potatoes also were cultivated. As usual, the women were the horticulturists; they performed likewise the more strictly domestic labor, and although they were "little better than slaves to their husbands, yet they do their work readily and cheerfully." Notwithstanding these conditions, which Wafer comprehended far better than many present-day writers on our Indian tribes, the domestic relations were felicitous, for the author "never knew an Indian beat his wife, or give her any hard words." Women customs; birth, nurture, and education of children; their dexterity; the indulgence of parents; the employment of girls and their modesty; weaving (a woman's occupation); basket making (a vocation of the men); marriage customs (the ceremony, wedding feasts, plurality of wives, adultery, etc.), are all discussed, as are feasts and meals in general, men's employments, dancing, women's diversions (including "their care of their drunken husbands"), hunting expeditions, provisions, meat curing and cooking, the manner of eating, traveling, computation of time, and "numbers and calculations" (with numerals 1 to 13, 20, 40). Wafer found "some affinity, not in the signification of the words . . . but in the pronunciation," between the "Darien Indians language" and the "High-Land language" of Scotland. Twenty-three native words and phrases which he could recall are recorded.

One of the plates bears the legend "Savage Sculp. The Indians maner of Bloodletting," and is illustrative of an interesting performance which the author witnessed, consisting of shooting small gaged arrows into the naked body of the patient, "up and down, as fast as he can, and not missing any part." Another plate portrays "the Indians in their robes in councel, and smoaking tobacco after their way." The custom consisted of rolling a cigar the thickness of the wrist and two or three feet in length; this was lighted by a boy who then blew the smoke through the great roll "into the face of every one of the company or

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PERIODICAL LITERATURE

CONDUCTED BY DR ALEXANDER F. CHAMBERLAIN

[NOTE.—Authors, especially those whose articles appear in journals and other periodicals not entirely devoted to anthropology, will greatly aid this department of the *American Anthropologist* by sending directly to Dr A. F. Chamberlain, Worcester, Massachusetts, U. S. A., reprints or copies of such studies as they may desire to have noticed in these pages. — EDITOR.]

GENERAL

Barth (P.) Die Geschichte der Erziehung in soziologischer Beleuchtung. (Vrtljschr. f. wiss. Philos. u. Soz., Leipzig, 1903, xxvii, 57-80, 209-229.) These first two sections treat of education as dependent upon the constitution of human society, education among the various savage and barbarous peoples, among the semi-civilized and civilized, etc. Too much dependence is placed by the author on Lippert, Prescott, Morgan, and Letourneau, although he uses also Grosse, Schurtz, and Steinmetz.

Blin (Dr) Mensurations crâniennes sur le vivant. (R. de Psychiatrie, Paris, 1903, xiv, 353-375, 5 figs.) Treats of technique of cranial measurement, with references to work of Manouvrier, Binet, Simon, etc. Their conclusions are briefly cited

Boeser (P. A. A.) Dr W. Pleyte. (Int. Arch. f. Ethnogr., Leiden, 1903, xvi, 76-78.) Sketch of life and works of the Dutch Egyptologist, who died March 11, 1903.

Brown (C. E.) The collection and preservation of local archeological data. (Wisc. Archeol., Milwaukee, 1903, II, 102-111.) Instructions and suggestions covering preparation for research, surveying and mapping, exploration, classification and filing of data, reports, etc.

Chamberlain (A. F.) The survival of human personality. (Harper's Mag., N. Y., 1903, cvii, 277-282.) Treats of the origin and development of human personality and the idea of its survival, from the anthropological standpoint.

Cosentini (F.) La genèse et les bases de la conscience religieuse. (L'Hum. Nouv., Paris, 1903, vii, 182-194.) Author concludes that the moral element is the sound and vital factor of religion and the vital and evolutionary element of all religions.

Doyle (K. D.) Notes on philology. (Westm. Rev., Lond., 1903, clx, 323-335.) Holds that "pantheistic thought was a most important, if not the sole force governing the early development of language." Male is progress, female "eternal no." Develops these ideas in *outré* fashion.

Durkheim (É.) Pédagogie et sociologie. (R. de Métaph. et de Mor., Paris, 1903, xi, 37-54.) General discussion. Society must be asked for the guiding ideas of the century, for it is the very source of educative life. Sociology should give pedagogy such a body of directive ideas and ideals.

Flournoy (T.) Les principes de la psychologie religieuse. (Arch. de Psych., Genève, 1903, II, 33-57.) General discussion. The two general principles of religious psychology are the exclusion of the transcendental, and the biological interpretation of religious phenomena.

van Gennep (A.) De l'emploi du mot "chamanisme." (Rev. d. l'Hist. d. Relig., Paris, 1903, repr., 1-7.) Argues against the use of *chamanisme* in French (English *shamanism*) in the sense of "a certain form of religion." Peoples may have *shamans*, but their religion may be animistic, totemistic, etc., not *shamanistic*. The sociological study of the

shaman is yet to be made and his activity is not all there is of primitive, or even of Siberian religion.

Giuffrida-Ruggeri (V.) Superiorità intellettuale e funzione genesica. (Arch. p. Psichiatria, Torino, 1903, XXIV, estr. 3 pp.) Critique of the idea set forth in Richard's *L'idée d'évolution* (Paris, 1903) that gestation is the cause of arrested mental development in woman, which, Giuffrida-Ruggeri thinks, the facts do not warrant.

Hutchinson (W.) Play as an education. (Contemp. Rev., Lond., 1903, LXXXIV, 374-394.) Discusses evolutionary play-activities, recapitulatory stages of childhood, etc. Author considers that "the very strength of the play-impulse should prepossess us in its favor."

Kollmann (J.) Die Pygmäen und ihre systematische Stellung innerhalb des Menschengeschlechts. (Verh. d. Naturf. Ges. in Basel, 1902, XVI, 85-117, 4 figs.) Argues that the pygmies, traces of whom are found to-day, or in prehistoric times, in all the great land-areas of the world, are the primitive type of mankind from which in course of time have developed the taller races. Race-dwarfs, such as these, are to be distinguished from dwarfs, the product of *misère*, the former being sound and healthy, the latter pathological. The author recognizes five stages in human evolution: 1. Pygmy period. 2. Development of subspecies from pygmies. 3. Development of tall subspecies alongside pygmies. 4. Development of "races." 5. Development of "types" or local varieties. There has been no "mutation-period" for man since about 10,000 years ago. Brief bibliography.

Lapham (Julia A.) George P. Delaplaine. (Wisc. Archeol., Milwaukee, 1903, II, 100-102.) Sketch of archeological activities, particularly in 1859.

MacDonogh (N.) The ballads of the people. (Nineteenth Cent., Lond., 1903, LIV, 458-471.) Appreciative account of music-hall songs.

Marchand (L.) Autopsie crânienne et rachidienne. (R. de Psychiatrie, Paris, 1903, XIII, 343-346.) Rules for procedure in relation to skull, brain, etc., in autopsies.

Markowitz (A.) Der Völkergedanke bei Alexander Humboldt. (Globus, Brnschw., 1903, LXXXIV, 1-3.) Seeks to show from passages from Humboldt that while perhaps the first to formulate the modern idea of the unity of human thought as explaining resemblances and identities (though he himself leaned more to the theory of borrowing), Humboldt exercised no marked influence on the development of ethnology as a science.

Moorehead (W. K.) Commercial vs. scientific collecting. (Wisc. Arch., Milwaukee, 1903, II, 93-95.) Appeals against the attempt to make commercial successes out of relic collecting, for which not a few give up their regular occupations.

Myers (C. S.) The future of anthropometry. (J. Anthr. Inst., Lond., 1903, XXXIII, 36-40.) Notes that anthropometry has suffered from false reasoning from slender premises; demands more data; suggests inauguration of a new branch — anthropoidometry. Other points to be studied are effects of cross-breeding, dependence of variation of one character upon that of another, evolutionary changes in peoples of fixed habitats, etc.

Oppert (G.) Tharshish und Ophir. (Z. f. Ethn., Berlin, 1903, XXV, 212-265.) In this second part of his detailed study Dr Oppert concludes that the Ophir of Solomon was not India, but East Africa. The names in I Kings, 10, 22, are discussed in particular fashion.

Papillault (M.) Ceinture de la Vierge. (Bull. Soc. d'Anthr. de Paris, 1903, V^es., IV, 362.) Note on a "girdle of the Virgin" (silk ribbon) from the beginning of the 19th century. The "girdle" preserved at the church of Loches is said to give the exact measurement (2 m.) of the Virgin Mother.

Pfister (H.) Zur Anthropologie des Rückenmarks. (Neur. Cbl., Leipzig, 1903, XXII, 757-762, 819-824.) Gives results of the investigation of the weight of the spinal marrow in relation to stature, brain-weight, etc., in the case of 33 boys (aged from 9 days to 6½ years) and 39 girls (13 days to 5¼ years). In boys at all ages the spinal marrow is heavier and longer than in girls, but lighter in proportion to brain-weight and heavier in proportion to stature.

- Ueber das Gewicht des Gehirns und einzelner Hirnteile beim Säugling und älteren Kinde. (Ibid., 562-572.) Details, with tables, of investigations of the brains of 161 boys and 141 girls, aged from 1 week to 14 years, from the Children's Hospital, Berlin. With boys the average total brain-weight is greater at all ages than with girls, and both sexes show great individual variability. Both sexes have about one-third their total brain-weight at the end of the first 8 months, two-thirds at the end of the first half of the third year; then comes an ever-decreasing growth till about the 20th year, or even after, when the maximum weight is achieved. Weights of 1350-1400 gr. and more occur in boys of 5 years.
- Regnaud (P.)** La mythologie a-t-elle été un recul de l'esprit humain? (Rev. Philos., Paris, 1903, xxviii, 63-65.) Answers question in negative. Ambiguity of language is the initial cause of the inherent error of mythology. The mythic period corresponds to certain disease-periods of childhood, — in both cases long-continued immunity follows recovery.
- Regnault (F.)** Essai sur les proportions du corps. (Bull. Soc. d'Anthr. de Paris, 1903, v^e s., iv, 276-291.) Treats of canons, disharmony, physiologic increase of long-bones, action of environment, age, sex, profession, race. The general law of greater proportional increase for the limbs than for the trunk when the stature increases has exceptions due to disease (typhoid fever), "physiological poverty," influence of profession or occupation. Besides the "law of convergence of forms" there occurs also a "law of organic balance."
- Richel (A.)** Lippenschmuck. (Globus, Brnschw., 1903, LXXXIV, 31-34.) Treats of lip-ornaments, — perforation, pelete, plugs, pieces of bone, etc., — in all parts of the world, particularly in central Africa (the custom affects language sometimes), South America (Botocudos), Northwest Pacific coast, and among the Eskimo.
- Schmeltz (J. D. E.)** Rudolf Virchow: In Memoriam. (Int. Arch. f. Ethnogr., Leiden, 1903, xvi, i-xxvi.) Sketch of life and scientific activities, with portrait.
- A. F. Tetens. (Ibid., 78-80.) Sketch of life and activities of this authority on the Carolines, etc., who died at Hamburg, January 13, 1903.
- Semeyer (W.)** Dr Johann Jankó. (Mitt. d. Anthr. Ges. in Wien, 1903, xxxiii, 274-275.) Sketch of life and scientific activities of the Hungarian ethnographer, who died July 28, 1902, aged 35 years.
- Shaler (N. S.)** The natural history of war. (Int. Quart., Burlgtn., Vt., 1903, viii, 17-30.) Notes the decline of combat even before the appearance of monkeys and anthropoids and the lack of specialized weapons in the arboreal series. War, with mankind, is an incident of the development of great peoples and civilizations.
- Thomson (A.)** A consideration of some of the more important factors concerned in the production of man's cranial form. (J. Anthr. Inst., Lond., 1903, xxxiii, 135-166, 1 pl., 3 figs.) Discusses influence of the jaw (feeble mandibular development makes for brachycephaly); stature, law of compensation, sutures, microcephaly and macrocephaly, cephalic index (expresses no important anatomical relation), skull-type of infants, experimental demonstration of transition in skull-types. Dr Thomson believes that skull-types are not necessarily stable and that, in course of time, the evolution of a round-headed race from a long-headed one is possible.
- Unger (E.)** Geschwänzte Menschen und ihre Entwicklungsgeschichte. (Z. f. Ethn., Berlin, 1903, xxxv, 469-475, 6 figs.) Résumés scientific opinion of the nature and evolution of the "tail" in man. Author concludes that "tails" in man are "the persistence of a normal fetal formation" and the tail-condition is established for man as well as for the other vertebrates.
- Vernes (M.)** Les religions et leur rôle social. (L'Hum. Nouv., Paris, 1903, vii, 225-239.) Treats of the position taken by Judaism (especially), primitive Christianity, Hellenic and Græco-Roman culture, Islam, Roman Catholicism, Protestantism, and modern philosophy toward the great social questions of the day.
- Vierkandt (A.)** Wechselwirkungen beim Ursprung von Zauberbräuchen. (Arch. f. d. gesamte Psych., Leipzig, 1903, ii, 81-92.) General discussion of magic and symbolic actions. The author points

out how easily, especially in the motor-minded, all ideas of the past and the future take on a dramatic form. The mutual influencing of shaman and audience is considered as beginning in more or less unintentional action and ending in what seems to be preconceived and planned.

Vinson (J.) L'enseignement des langues. La grammaire. (R. de l'Éc. d'Anthr. de Paris, 1903, XIII, 213-229.) Discussion of phonetics, morphology, semantics (or "functionology"), syntax. The method of linguistics is that of the other natural sciences: it studies facts and positive entities, not metaphysical abstractions. A grammar is only a guide, memory a useful aid to observation.

EUROPE

Arne (T. J.) Nyare upptäckter rörande den äldre stenålderns konst. (Ymer, Stockholm, 1903, XXIII, 113-129, 11 figs., map.) Résumés, with brief bibliography, recent literature concerning the art of the older stone age, particularly in western Europe. The statuettes of Brassempouy, the pictographs and cave-paintings of Font-de-Gaume, Combarelles and Altamira are discussed. The author considers that the cave-pictures, etc. (chiefly of women and wild animals), are the work of the male portion of the prehistoric communities.

Bartels (Olga). Aus dem Leben der weissrussischen Landbevölkerung im Gouvernement Smolensk. (Z. f. Ethn., Berlin, 1903, XXXV, 650-667.) Treats of birth, marriage, and death customs, and of the peasant calendar. A list of the months with their day-names and folk-associations is given; these show how the year is divided between holidaying and work. The nicknames of the Saints, after whom most of the days are called, are also recorded.

Baudouin (M.) Inscriptions en miroir sur poteries gallo-romaines. (Bull. Soc. d'Anthr. de Paris, 1903, v^e s., IV, 361.) Note on mirror-writing on Gallo-Roman pottery, etc. Some 16 cases have been discovered. The paper appears in full in *Revue Scientifique*.

Bishop (Helen L.) The fountain of Juturna in the Roman forum. (Rec. of Past, Wash., 1903, II, 174-185, 7 figs.) Describes the fountain discovered in

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- v. Duhn (F.)** Italienische Entdeckerarbeit auf Kreta. (Dtsche Rundschau, Berlin, 1903, CXVI, 377-388.) Résumés investigations of Halbherr, Savignoni, etc., in Crete.
- Fourdrignier (É.)** Les Francs de Villiers-aux-Chênes, etc. (R. de l'Éc. d'Anthr. de Paris, 1903, XIII, 235-245, 7 figs.) Treats of the Burgundian "franciscus" (axe), the fibula with one-bodied bicephalous serpent, bronze earrings, etc., from the "Merovingian" graves at Villiers-aux-Chênes. Some "alphabetic" characters on the ear-rings "seem more related to the Scandinavian runes than to Latin letters."
- Gnatyuk (U.)** Galitch'ko-rus'ki narodni legendi. T. II. (Etnogr. Sbirnik, Lwów, 1902, XIII, 1-287.) Nos. 210-440 of Gnatyuk's collection of Galician-Ruthenian folktales. Of these 210-251 are stories of monsters, giants, dwarfs; 252-271, life after death, end of world, etc.; 272-368, moral and philosophical; 369-381, jest and satire about sacred subjects; 382-390, Huzulian creation-legends; 391-440, variants, chiefly Huzulian.
- Götze (H.)** Eine paläolithische Fundstelle bei Pössneck, Thüringen. (Z. f. Ethn., Berlin, 1903, XXXV, 490-493, 1 fig.) Brief account of the paleolithic "station" of Pössneck and the animal bones and objects of human origin found there. Based on Zimmermann and Schröder.
- Hahn (E.)** Der Sonnenschirm als Königssymbol und die Einführung des Rosenkranzes in West-Europa. (Int. Arch. f. Ethnogr., Leiden, 1903, XVI, 30-42.) Holds that interchange of culture-elements between East and West and West and East has been greater than generally admitted. The umbrella as a symbol of royalty goes back to primitive Babylonian times, and the rosy crown has been borrowed from western Islam, by way of Spain.
- Hahne (Hr.)** Bronze-Depotfund vom Rittergute Piesdorf. (Hr. Minister von Wedel) bei Belleben, Mansfelderseeskreis. (Z. f. Ethn., Berlin, 1903, XXXV, 484-487, 1 fig.) Brief account of the bronze rings, belonging to an urn deposit of the early bronze age, found at Piesdorf, with references to like finds elsewhere.
- Ueber diluviale Silixe aus der Börde bei Magdeburg. (Ibid., 495-498, 2 figs.) Describes "retouched" flints from a gravel pit near Magdeburg.
- Hoffmann-Krayer (E.)** Neujahrsfeier im alten Basel und Verwandtes. (Arch. Suisses des Trad. Pop., Zürich, 1903, VII, 102-131, 187-209.) Detailed account of the celebration of New Year's day and related ceremonies in old Bale. Marching about (with singing), wishing, masking, "making bishops and kings," visiting, New Year's gifts, Saturnalia and calends customs, are discussed.
- Hourwich (I. A.)** Religious sects in Russia. (Int. Quart., Burltn., Vt., 1903, VIII, 159-174.) Deals chiefly with the Czar's manifesto and the Kishinyov massacre.
- Knowles (W. J.)** Irish flint arrow- and spear-heads. (J. Anthr. Inst., Lond., 1903, XXXIII, 44-56, 8 pl. (78 figs.)) Origin, manufacture, classification (leaf-shaped, lozenge-shaped, kite-shaped, triangular, stemmed, indented), etc. The author's collection numbers 5363, of which 2127 are leaf-shaped and 1589 stemmed and barbed. Mr Knowles derives the neolithic from the paleolithic implements.
- Krause (E.)** Ueber die Herstellung vorgeschichtlicher Tongefässe. (Z. f. Ethn., Berlin, 1903, XXXV, 317-323.) Argues for "rotation" on supports and building up out of pieces of clay as *modi operandi* of the prehistoric potter.
- Bericht über die Konferenz zur genaueren Prüfung der in der Sitzung vom 21. März d. J. vorgelegten Feuerstein-Funde. (Ibid., 537-552, 16 figs.) Treats of alleged retouched flints and flints made with the Eskimo flaking apparatus. Krause accepts the "human" origin of the Tertiary "eoliths"; the only question now is how did this creature look and over what area did he extend?
- Layard (Nina F.)** A recent discovery of paleolithic implements in Ipswich. (J. Anthr. Inst., Lond., 1903, XXXIII, 41-43, 2 pls. (9 figs.)) Brief account of flints found in a pit in March, 1902, — some 30 in number, — exhibiting 16 distinct forms. A few fragments of animal bones were also discovered. To this paper Mr Clement Reed appends a geological "note."

- Lejeune (C.)** Quelques superstitions. (Bull. Soc. d'Anthr. de Paris, 1903, v^e s., IV, 374-379.) Records superstitions from various parts of France concerning the green lizard (*la fée verte*), "the black fairy," "thunder-stones" and folk weather-lore, moon-lore, oaths, bread-making, salt-spilling, broken ice, amulets, finger-nails, child-bed, etc. Some of these superstitions are under the protection of the clergy.
- Lissauer (A.)** Zwei fossile Zähne aus der Einhornhöhle bei Scharzfeld im Harz. (Z. f. Ethn., Berlin, 1903, xxxv, 669-670.) Brief description of two cave-bear teeth from the deep strata of the Einhornhöhle in the Harz, exhibiting signs of having been worked by human hands.
- Lönborg (S.)** Gamla hus och hustyper. (Ymer, Stockholm, 1903, xxiii, 163-194, 17 figs.) Treats of the old house and house types in Scandinavia. Interior and exterior are considered in some detail.
- von Luschian (F.)** Ueber den Riesen Machnow. (Z. f. Ethn., Berlin, 1903, xxxv, 479-481.) Details of anthropometric examination of Machnow, the Russian giant, in comparison with measurements of other very tall people. His height is 2380 mm., and his face is much smaller than this stature would suggest.
- Meringer (R.)** G. Bancalari und die Methode der Hausforschung. (Mitt. d. Anthr. Ges. in Wien, 1903, xxxiii, 252-273.) Criticizes the methods and ideas of Bancalari concerning the investigation of the development of the house.
- Meyer (A.)** Tschufut-Kaléh. (Globus, Brnschw., 1903, lxxxiv, 7-11, 3 figs.) Describes the abandoned settlement of Shufut-Kaléh in the Crimea, formerly inhabited by the Jewish sect of the Karaim or Karaites, who came there in the 13th century and left in the last half of the 19th. The place was probably selected as a refuge from Tartar conquerors.
- Mielke (R.)** Verzierungen in dem Lehm-fachwerk von Bauernhäusern und über einen Armring von der Oase Biskra. (Z. f. Ethn., Berlin, 1903, xxxv, 435-438, 11 figs.) Treats of the line-ornamentation of peasant-houses produced by a comb-like wooden spatula. Also of a bracelet from a Nail dancing-girl of the Biskra oasis.
- Zur Entwicklungs-Geschichte der sächsischen Hausform. (Ibid., 509-525, 26 figs.) Discusses evolution of the Saxon house-form. The primitive type of a *Dachhaus* is its starting point. The conditions of building account for the instability of the hearth. The ancient Saxon house is much older than the Westphalian.
- Die Ausbreitung des sächsischen Bauernhauses in der Mark Brandenburg. (Globus, Brnschw., 1903, lxxxiv, 3-6, 6 figs., map.) Treats of the Saxon peasant-house still found in Brandenburg, although once common all over western Germany.
- v. Miske (K.)** Funde aus Velem-St. Veit. (Stzgb. d. anthr. Ges. in Wien, 1903, 33-35, 7 figs.) Brief description of human remains, including 3 macrocephalic skulls, articles of bronze, clay, bone, etc., discovered in 1902. See *v. Török*.
- Nehrung (A.)** Ueber einen bearbeiteten Astragalus einer Ur-Kuh, *Bos primigenius*. (Z. f. Ethn., Berlin, 1903, xxxv, 641-642, 1 fig.) Brief account of artificially perforated astragalus of *Bos primigenius* from Summerdä, thought to have served as a handle for a prehistoric implement.
- Paton (Lucy A.)** Merlin and Ganiada. (Mod. Lang. Notes, Balt., 1903, xviii, 163-169.) Discusses the fairy-mistress theme in the *Vita Merlini* and related works, the magic apples, Merlin's madness, etc.
- Pittard (E.)** Un crâne présumé quaternaire trouvé en Espagne. (Rev. de l'Éc. d'Anthr. de Paris, 1903, xiii, 278-281, 2 figs.) Describes a dolichocephalic cranium from Perales, near Madrid, thought to be Quaternary. The jaw and cranium may not belong together. Opinion reserved as to the geological age. Tables of measurements.
- Puaix (R.)** Finnish literature. (Int. Quart., Burlgtn., Vt., 1903, viii, 108-130.) Discusses the Kalevala and the works of Runeberg.
- Reber (B.)** Les sculptures préhistoriques à Salvan, Valais. (Rev. de l'Éc. d'Anthr. de Paris, 1903, xiii, 270-277, 5 figs.) Treats of prehistoric sculptures (a remarkable one on the Roches du Planet in particular) on rocks at Salvan in Valais. The figures engraved are chiefly pits and "cups," long incisions

with circular or triangular extremities, crosses, etc.

Retzius (G.) och Wallengren (H.) Arkeologiska undersökningar i grottor & Kulborg i Skåne. (Ymer, Stockholm, 1903, xxiii, 143-162, 6 figs.) Account of the investigations of ten caves of Kulborg in Scania and the remains found. Flints representing the stone age and the bones of domestic animals, etc., were discovered.

Rivière (É.) Châtelaines en cuivre du XVIII^e siècle et bague en plomb du XIV^e siècle avec cœur au centre. (Bull. Soc. d'Anthr. de Paris, 1903 v^e s., iv, 363-365, 3 figs.) Describes 2 copper chate-laines of the time of Louis XV, ornamented with a heart, and a child's ring (heart ornament) of lead belonging to the 14th century. See also p. 361.

— Découverte d'une nécropole Gallo-Romaine à Paris. (Ibid., 293-304, 17 figs.) Describes excavation and finds made in February, 1903. Funeral vases, fragments of *tegulæ*, pottery, bones, etc. On some of the fragments of bone, *tegulæ*, etc., Roman numerals are inscribed, one in mirror-writing. See *Baudouin*.

Schæfer (A.) Ueber Spielmannsschilde. (Arch. Suisses des Trad. Pop., Zürich, 1903, vii, 159-160.) Cites evidence from literature of the 15th and 16th centuries of custom of presenting honorary shields to singers, players, etc.

Schliz (A.) Salzgewinnung in der Hallstattzeit mit Bezugnahme auf die mut-masslichen Verhältnisse in Württemberg-Franken. (Z. f. Ethn., Berlin, 1903, xxxv, 642-650, 2 figs.) Treats of salt-making in the Hallstatt period and points out the location of salt springs in Württemberg-Franconia, probably worked by prehistoric man.

Schmidt (E.) Ein neuer diluvialer Schädel-typus? (Globus, Brnshwg., 1903, LXXXIII, 357-359.) Résumés Verneau's account of the "new type" of prehistoric (possibly negroid) man discovered in the Grotte des Enfants near Mentone. Dr Schmidt is of opinion that the Mentone skeletons are too near the Cro-Magnon man to be at all styled a *new* type or variety of the human race.

Schmidt (H.) "Tordos." (Z. f. Ethn., Berlin, 1903, xxxv, 438-468, 46 figs.) Treats of Tordos, in Transylvania,

one of the most important neolithic "stations" characterized by the so-called "Bandkeramik." The technique, form, ornamentation, etc., of Tordos pottery are considered with some detail—also pottery-marks. The notable resemblances between the Tordos and the Trojan culture may be explained by their both having sprung from a third and common center. Tordos probably had connection with Butmir in Bosnia, the most important neolithic "station" for "Bandkeramik" in southeastern Europe.

Schoener (J. G.) Åland. (Globus, Brnshwg., 1903, LXXXIII, 359-364, 5 figs.) Historico-geographical sketch, containing some notes on the inhabitants, their houses, religion, etc.

Schoetensack (O.) Ueber einer neolithischen Knochen-Schmuck von Rinne-hügel, u.s.w. (Z. f. Ethn., Berlin, 1903, xxxv, 378-381, 4 figs.) Describes a neolithic bone ornament from Rinne-hügel, Livonia, strikingly like a perforated fastener (*fibula paleolithica*) of the Magdalenian epoch. These fasteners were used horizontally (some of another type vertically) to clasp the fur-clothing at the neck.

Sprecher (F. W.) Volkskundliches aus dem Taminathal. (Arch. Suisses des Trad. Pop., Zürich, 1903, vii, 131-142, 210-224.) Treats of birth, baptism, burial, plays and customs of youth, the unmarried of both sexes, *Samachlaus*, Christmas, New Year's, Shrove-tide, church-feast, religious usages, shepherd-life, life on mountain-meadows in spring-time, "alp"-life, making wood-getting, family festival in winter.

Tomasi (P.) Note au sujet d'une hache polie votive en vert antique trouvée à Grossa, Corse. (Bull. Soc. d'Anthr. de Paris, 1903, v^e s., iv, 372-374.) The Grossa axe of jade probably came from Corte, the "station" of the dolmen-builders of northern Corsica. The Robenhaus Sardinians were of the North African type. The dolicephaly of the Corsicans recalls that of the prehistoric people of the Dordogne in France.

v. Török (A.) Bericht über die macrocephalen Schädel aus Velem. (Stzgr. d. Anthr. Ges. in Wien, 1903, 35-48.) Cranioscopic and craniometric details of a male, a female, and a fragment of a

child's skull, all macrocephalic, from the prehistoric "station" of Velem. Both adult skulls are artificially deformed and are markedly dolichocephalic.

Träger (P.) Anthropologische und ethnographische Photographien und hausgewerbliche Erzeugnisse der Huzulen. (Z. f. Ethn., Berlin, 1903, xxxv, 606-619, 24 figs.) Treats of the physical characters, dress and ornament, domestic implements and utensils, etc., of the Huzules, an interesting mountain-people of the Carpathians in Galicia and Bukovina. The Huzules show great predilection for and skill in brass work.

Vines (J. H.) The physique of Scottish children. Some fallacies of a Royal Commission. (Westm. Rev., Lond., 1903, CLX, 319-322.) Criticizes the Legg Report of 1900. Slum population has improved in last 20 years.

Voss (A.) Keramische Stilarten der Provinz Brandenburg und benachbarter Gebiete. (Z. f. Ethn., Berlin, 1903, xxxv, 161-212, 84 figs.) Detailed description of the 4 ceramic types of the Brandenburg country in prehistoric times. The Billendorf type, the relations of which are with the south, is the most extensive; the Aurith and Göritz types are later developments of the old Lausitz, which is connected with an important culture-movement.

Weinberg (R.) Die anthropologische Stellung der Esten. (Ibid., 382-430, 3 pls., 12 figs.) Valuable article, with a good bibliography, on prehistory and ethnography of the Esths, physical type, comparative anthropology, psychic life. The author declares against the idea of a somatological unity of the Finno-Ugric or Ural-Altaic peoples; the stock consists of several distinct anthropological types, one of which is the mesocephalic or subdolichocephalic Esths. Mound-graves with cremation as characteristically Esthonian. The Esthonian brain exhibits several peculiarities.

— Zur Schädelkunde der Liven. (Biol. Cbl., Lpzg., 1903, xxiii, 337-347.) Résumés the data in the author's *Crania livonica*. The ancient Livonian skull is dolichocephalic and leptoprosopic, with several marked anatomical peculiarities.

— Ueber einige ungewöhnliche Befunde an Judenhirnen. (Ibid., 154-162.)

Treats briefly of the occurrence in Jewish brains of union of the sulcus Rolando with the sylvian fissure, superficial *gyrus cuneus*, communication of the parietal occipital fissure with the interparietal sulcus, bilateral bridging over of the sulcus Rolando, etc.

Weisbach (A.) Die Slovenen. (Mitt. d. Anthr. Ges. in Wien, 1903, xxxiii, 234-251.) Gives, with many tables, the results of the anthropometric measurements (stature, color of hair, eyes and skin, color-types, cephalic indices) of 2481 male Slovenians (nearly all soldiers, 21-25 years of age) from the coast-land of Trieste, Carniola, Carinthia, Styria, etc. The average cephalic index is 84.3; stature, 1683 mm.

Wright (W.) Skulls from the Danes' graves, Driffield. (J. Anthr. Inst. Lond., 1903, xxxiii, 66-73, 2 pls. (16 figs.)) Brief general description and tables of measurements of 22 skulls from the so-called "Danes' Graves" in the Yorkshire wolds. The people to whom they belonged were mixed, dolichocephaly prevailing. Five types are distinguished. The graves seem to date from the early iron age.

Zürcher (Gertrud) und Reinhard (M.) Allerhand Aberglauben aus dem Kanton Bern. (Arch. Suisses des Trad. Pop., Zürich, 1903, vii, 131-142.) Records 135 items of folklore relating to children, marriage, house-life, actions of human beings and animals, pains and diseases, death and corpses, witches, etc.

AFRICA

Ausgrabung alter Grabbügel bei Timbuktu. (Globus, Brnschw., 1903, LXXXV, 25-26.) Summary of Desplange's account in *L'Anthropologie*, 1903, 151-172.

Bartels (M.) Der Würfelzauber südafrikanischer Völker. (Z. f. Ethn., Berlin, 1903, xxxv, 338-378, 50 figs.) Treats of dice-throwing in sorcery and "magic" among the Basuto, Zulus, Bakalahari, Bakalanga, Makalanga, Konde, and, particularly, the Bawānda. Interesting study of the dice-oracle in southern Africa. Three groups are recognized, one originating in the southern Transvaal, another north of the Limpopo, the third being a mixed type. The southern type helps itself out with astragals, etc.

Boussac (P. H.) *La grenouille en Égypte et dans la Bible.* (Rev. Scient., Paris, 1903, 4^e s., xx, 239-242.) Notes the prominence of the frog in Egyptian mythology. Its name is a synonym for multitude and fecundity. Details in Lortet's and Gaillac's *La faune momifiée de l'ancien Égypte* (Lyon, 1903).

Dennis (T. D.) Egyptian stone implements. (J. H. U. Circ., Balt., 1903, xxii, 74-75, 4 figs.) Brief account of an ax head, two knives, and a spear-head, all but the latter from between Abydos and Thebes.

— The transliteration of Egyptian. (Ibid., 73-74.) Concludes that "the adoption of a uniform system for the transliteration of Egyptian appears to be a very remote possibility."

Gentz (*Lieut.*) *Die Geschichte des südwestafrikanischen Bastardvolkes.* (Globus, Brnschw., 1903, LXXXIV, 27-28, 4 figs, map.) Brief account of the South African "Bastards," a people originally sprung from the union of Europeans (chiefly Boers) and Hottentot women, and numbering now some 2000.

Kunene-Sambesi-Expedition (*Die*) *des Kolonialwirtschaftlichen Komitees 1899-1900.* (Globus, Brnschw., 1903, LXXXIII, 378-381, 6 figs.) Contains some notes on the Quiri negroes, who are caoutchouc workers.

von Luschan (F.) *Schnitzwerke aus dem westlichen Sudan.* (Z. f. Ethn., Berlin, 1903, xxxv, 430-435, 7 figs.) Describes 2 carved human forms from the Banzo, 3 seats from the Cameroons, and 2 elephant-marks from the Bafut. One of the Banzo figures is completely overlaid with cowry-shells.

Myers (C. S.) *Contributions to Egyptian anthropology: tatuing.* (J. Anthr. Inst., Lond., 1903, XXXIII, 82-89, 2 pls. (36 figs.)) Based on material collected in 1901-1902. Dr Myers concludes: The simpler and more purely geometrical patterns of modern Egyptian tatuing are akin to those which prevail throughout northern Africa, while the more complex have been derived from an Eastern source. The tatuing is performed by the Ghagars and other wandering tribes.

Schweinfurth (G.) *Ueber Kieselartefakte aus Theben.* (Z. f. Ethn., Berlin, 1903, xxxv, 504-507.) Brief general account of Theban "coliths," etc.

ASIA

Betts (G. E.) *Social life of the Miao-tsi.* (J. China Br. R. Asiat. Soc., Hongkong, 1900-1901, N. s., xxxiii, 84-104.) Treats of the tribes of Kweichau, — Chongkia (Shan immigrants) especially, Miao-kia, Heh-Miao ("black aborigines," so-called from their dress), etc. Chief topics are: Tribal life, chiefs, dress, wedding, songs (creation song is hours long), houses, food, markets, festivals, schools, sacred stones, demon-lore, birth and death ceremonies, cow-sacrifice, cannibalistic legend, seventh moon festival, love-songs, wooing, exorcism, etc. The Miao have a deluge tradition.

Blake (F. R.) *Babylonian and Atharvan magic.* (J. H. U. Circ., Balt., 1903, xxii, 66-67.) Briefly compares ancient Babylonian and Hindu magic. The incantations of the former are all "white magic," and no incantations for prosperity in the ordinary affairs of life or love charms exist. On the whole there is "no very striking similarity between the magical collections of Babylonia and India."

Bourne (F. S. A.) *Possible and impossible reforms.* (J. China Br. R. Asiat. Soc., Hongkong, 1900-1901, N. s., xxxiii, 1-10.) Believes that the Chinese "are quite unfitted to put in practice the political ideals of France, of England, and of the United States. Facts, not words, will drive them. Most of the "new constitutions" and allied proposed reforms would lead China astray. China will copy Germany rather than Russia. Among feasible things are a radical reform of the currency and the registration of land-titles.

Challaye (F.) *Un philosophe japonisant: Lafcadio Hearn.* (R. de Métaph. et de Mor., Paris, 1903, xi, 338-351.) Discusses writings on Japanese life and philosophy of Hearn, professor in the University of Tokyo.

Clement (E. W.) *Father Time in Japan, or Japanese calendars.* (Am. Antiq., Chicago, 1903, xxv, 25-35.) Treats of different ways of reckoning days, months, years, and other periods in Japan, with lists of native terms and names. An outline calendar for 1903 is given. National holidays and festivals are also considered.

— Japanese calendars, Part II. Folklore of Japanese calendars. (Ibid., 247-

- 255.) Items from various sources concerning cold and hot weather, New Year's day, special festive occasions, holidays of classes, professions, etc., children's holidays and festivals, age-superstitions, season-lore, etc. The Japanese indefiniteness in time-reckoning is noted
- Edkins (J.)** Siün King, the philosopher, and his relations with contemporary schools of thought. (*J. China Br. R. Asiat. Soc.*, Hongkong, 1900-1901, N.S., XXXIII, 46-55.) Outlines the teachings of a philosopher to whom, with Mencius, is said to be due the preservation from decay of the tradition of the sages. While he taught that human nature was evil, he still holds his place in Confucian literature.
- Excavation of the ruins of Babylon.** (*Rec. of Past, Wash.*, 1903, II, 185-189, 273-285, ill.) Third and fourth sections of a résumé of the official reports of the German explorations. Treats of the Sardanapalus cylinder, a deed of investment of a priest of Nebo at Borsippa, excavations in the Amran-ibn-Ali hill, the gods Adad and Marduk, a new kanephore from the third millennium B. C., the paving-stones of Aiburschabu, the processional street of Marduk, and the lion frieze.
- Fawcett (F.)** The Kondayamkottai Maravars, a Dravidian tribe of Tinnevely, southern India. (*J. Anthr. Inst.*, Lond., 1903, XXXIII, 57-65.) Discusses briefly origin and habitat, somatic characters, ornament, marriage, tribal nomenclature, wedding-ceremonies, death and funeral rites, miscellaneous customs. The average measurements (with max. and min.) of 10 and 25 male individuals are given. The Kondayamkottai are considerably taller, broader across the shoulders, darker-skinned and heavier than the average for southern India.
- Fischer (A.)** Ueber die Herkunft der Shantrommeln. (*Z. f. Ethn.*, Berlin, 1903, XXXV, 668-669.) Brief account of the *pasis*, or metal drums of the Shans of Ngwedaung where they are cast by a few families only. The art of making bronze bells probably came to the Shans from China.
- Fisher (C. S.)** The architecture of Nippur. (*Rec. of Past, Wash.*, 1903, II, 99-118, 14 figs.) Treats of the Parthian fortress (built over the ruins of the Temple of Bel), the little Parthian palace, the Temple of Bel, the temple library, the city wall and gate.
- Goere (V.)** The American excavations at Nippur. (*Monthly Rev.*, Lond., 1903, XII, 88-108.) Well-illustrated account of excavations by American explorers 1889-1900.
- Goldstein (F.)** Zur Kenntnis der Chaldäer. (*Z. f. Ethn.*, Berlin, 1903, XXXV, 558-560.) Criticizes views of Oppert. Author concludes that the Chaldeans came from Greece and the west.
- Grauratzka (M. C.)** Sagen der Khamti und Singpho, Assam. (*Globus, Brnschw.*, 1903, LXXXIII, 364-365.) Reports briefly myths and legends of the Singpho and Khamti of Assam concerning the origin of the earth and of man, dream-lore, wedding, birth, death and burial customs, life hereafter, etc. Some notable differences exist in the psyche of these two peoples. Cousin-marriages are in vogue. Singpho women are tattooed, Khamti not.
- Haupt (P.)** Archeology and mineralogy. (*J. H. U. Circ.*, Balt., 1903, XXII, 51-53.) Indicates aid mineralogy can give to archeology. Argues that the Biblical "stones of Tarshish are ruby-like crystals of cinnabar from the quicksilver mines of Almaden in southern Spain" (where "King Solomon's mines" were located). Ophir was the Rhodesian Eldorado. The sapphire of the ancients was lapis lazuli from Badakhshan.
- Hearn (L.)** Le nirvana. Étude de Bouddhisme synthétique. (*R. de Métaph. et de Mor.*, Paris, 1903, XI, 352-379.) General discussion, chiefly of Japanese Buddhism, which has many points of resemblance with the teachings of occidental science, though departing from the psychology of to-day in predicating the existence of divine and immortal sentiments.
- Hedin (S.)** Resa genom Centralasien. (*Ymer, Stockholm*, 1903, XXIII, 4-48, 13 figs.) Contains some notes on the peoples of the regions of Central Asia traversed by the author, on ruined cities (Lop-nor, etc.), Tibetans, Ladaki, etc.
- Henry (A.)** The Lolos and other tribes of western China. (*J. Anthr. Inst.*, Lond., 1903, XXXIII, 96-107, 2 pls., 3 figs.) Treats of Tibetans, Miao-tze, Yao, Shans, Woni, Pula, and Lolos,—all but

the last very briefly. The Lolo somatic characters, mode of writing, language, spirit-lore, death and burial rites, demonology, cosmogony (deluge), marriage customs, poetry, etc., are discussed. Their pictographic script is non-Chinese in origin (Nestorian influence is suspected), and the class to which the Chinese, Miao-tze, and Lolo tongues belong form a primitive group by itself.

Hewitt (J. F.) Natives and customs of Chutia Nagpore. (*Nature*, Lond., 1903, LXVIII, 369-371, fig.) Based on F. B. B. Birt's *Chota Nagpore* (London, 1903). Illustrations of Santal dance.

Hoang (P.) Tableau chronologique de la dynastie Mandchoue-chinoise Ta-ts'ing. (*J. China Br. R. Asiat. Soc.*, Hongkong, 1900-1901, N. S., XXXIII, 185-235.) Lists, with explanatory notes, the 318 members of the present Manchu dynasty and the empresses.

Holbé (M.) Quelques observations sur un groupe de Khas du Bas-Laos. (*Bull. Soc. d'Anthr. de Paris*, 1903, V^e s., IV, 368-372, 4 figs.) Anthropological notes on the Khas of Lower Laos, belong to the Brao, Pouône, Cherey, Proón, Lovek, and Tiên tribes. Stature averages 1.58 m.; range 1.48-1.71. Fingertreach generally exceeds stature by a few cm.

Johnston (C.) The laws of Hammurabi and the Mosaic code. (*J. H. U. Circ.*, Balt., 1903, XXII, 59-60.) Argues that "the enactments of the old Babylonian king, formulated about 2250 B. C., passed more than 1000 years later into the Book of the Covenant, and so became the heritage of Israel and of the world."

— Cuneiform medicine. (*Ibid.*, 60-62.) Outlines Babylonian system of medicine, sympathetic magic, etc. The school of Byzantium of mediæval times goes back "through the Nestorian and Talmudic writings to the palmy days of Nineveh and Babylon." (See von Oefele's *Keilinschriftmedicin*, Leipzig, 1902.) Ancient Assyrio-Babylonian influence continues in astrology, cult of sacred numbers, mystic influence of minerals, charms, talismans.

ten Kate (H.) Nachtrag zur "Psychologie der Japaner." (*Globus*, Brnschw., 1903, LXXXIV, 15-16.) Replies to criticisms of previous paper. The "topsy-turvydom" and pseudo-stuporosity, Dr

ten Kate noted in the Japanese, belong also to the Chinese, the Javanese, etc.

v. Le Coq (Hr.) Zwei ethnologische Vorlagen. (*Z. f. Ethn.*, Berlin, 1903, XXXV, 507-509.) Brief account of a red-painted, lacquered, and gold-ornamented (Japanese heraldic) quiver from Minusinsk (Siberia), and an enormous iron stirrup from Mexico of Spanish origin.

Macklin (W. E.) Mencius and some other reformers of China. (*J. China Br. R. Asiat. Soc.*, Hongkong, 1900-1901, N. S., XXXIII, 236-260.) Treats in particular of Mencius and his social and philosophical ideas, — also of Kwang Chung, Shan Yang, Tsin Shi Hwang, San Hung Yang, Wang an Shi. The author goes perhaps too far in attributing too many "socialistic" ideas to the great philosopher. He thinks Mencius advocated free trade, site-taxes, remission of duties, licenses, rates, etc.

Moule (G. E.) Notes on the Ting-chi or half-yearly sacrifice to Confucius. (*Ibid.*, 120-156.) Describes, with texts and music of songs and hymns, views of temple, etc., the ceremony of sacrifice to Confucius as witnessed at the chief temple in Hangchow, on March 10, 1891.

Müller (F. W. K.) Einige neue Erwerbungen der Indischen und Chinesischen Abteilungen des Königl. Museum für Völkerkunde. (*Z. f. Ethn.*, Berlin, 1903, XXXV, 483-484.) Notes on a collection of the portraits of generals which the Manchu emperor K'ien-lung had painted by the Jesuits at his court; two pictures treating of the hero-deeds of the last emperor of the present dynasty; a book which the emperor K'ien-lung had engraved on nephrite plates, etc.

Niehus (Helene) Indische Rosen und ihre Verwertung. (*Globus*, Brnschw., 1903, LXXXIV, 11-14, 7 figs.) Treats of the roses of India and the products obtained from them by Hindu workers.

Offord (J.) The myths and laws of Babylonia and the Bible. (*Am. Antiq.*, Chicago, 1903, XXV, 258-261.) Compares codes of Moses and Hammurabi in opposition to views of Delitzsch.

Oussani (G.) Mourning rites and customs in early Arabia. (*J. H. U. Circ.*, Balt., 1903, XXII, 85-87.) Presents material derived from the ante-Islamic poets. Among Arabs women chiefly

mourners. Most severe mourning customs are "the natural expression of emotion in extreme grief," and can be explained on purely psychological grounds.

— Origin and development of the Arabic dialect. (Ibid., 83-85.) The appearance in the sixth century, A. D., of the Arabic poetic language is unparalleled elsewhere, and its rise was due to the public gatherings, fairs, "congresses," etc., common among the Arabian tribes. The Korân fixed the Koraish dialect as the future literary language. No living Arabic dialect diverges from the classic speech as does French from Latin, and none is so near it as is the Lugodoric dialect of Sardinia to its parent speech.

— Phonetic differences between the eastern and western dialects of Syriac. (Ibid., 81-83.) Points out 20 vocalic and consonantal divergences. Eastern or Nestorian is more primitive, but least studied. Classical Syriac "has continued to be cultivated by native scholars until the present day, and is still the liturgical language of six powerful oriental churches."

Raverty (H. G.) The invention of chess and backgammon. (Am. Antiq., Chicago, 1903, xxv, 255-258.) Reprinted from the *Journal of the Asiatic Society of Bengal*. Gives Persian account of invention of the game of *nârd* or backgammon, and of chess, which came afterward.

Rosenau (W.) The Sonneborn collection of Jewish ceremonial objects. (J. H. U. Circ., Balt., 1903, xxii, 67-68.) Catalogues briefly the Sonneborn collection presented to Johns Hopkins University in 1901, consisting of objects in use in the synagogue proper, in the home, and on special occasions. A complete catalogue will be found in the author's *Jewish Ceremonial Institutions and Customs* (Baltimore, 1903).

Schmeltz (J. D. E.) Choppers from British India? (Int. Arch. f. Ethnogr., Leiden, 1903, xvi, 52, 2 figs.) Brief note on two ornamental choppers, thought to be from British India, now in the Vis collection at Amsterdam.

Spitzka (E. A.) The brain-weight of the Japanese. (Science, N. Y., 1903, N. S., xviii, 371-373.) Résumés investigations up to date, particularly those of Taguchi, and compares results with Eu-

ropean data. Japanese brains average well as compared with those of the white race. The brains of Japanese children seem to develop more slowly than those of European children.

Stönnér (Hr) Reiseskizzen aus Siam und Kambodscha. (Z. f. Ethn., Berlin, 1903, xxxv, 619-630, 7 figs.) Describes travels in 1902. Angkor-Vat and its temple are treated with some detail.

— Stück von einer Säule aus dem Tempel von Angkor-Vat. (Ibid., 631-632.) Note on a fragment of a column from Angkor-Vat, of gray-green sandstone.

Vale (J.) Irrigation of the Che'ng Tu plain. (J. China Br. R. Asiat. Soc., Hongkong, 1900-1901, N. S., xxxiii, 105-119.) Account of the origin and improvement of an irrigation system begun in the third century B. C., which has turned what was once a barren district into a fertile plain teeming with population.

Virchow (H.) Das Skelett eines verkrüppelten Chinesinnen-Fusses. (Z. f. Ethn., Berlin, 1903, 266-316; 5 pls., 5 figs.) Detailed description of the anatomic characters of the bones of the compressed foot of a Chinese woman about 30 years of age.

Walshe (W. G.) The ancient city of Shaohing. (J. China Br. R. Asiat. Soc., Hongkong, 1900-1901, xxxiii, 261-283.) Historical sketch of city and its objects of interest, from about 2000 B. C. Here are to be found a famous stone image of Kwanyin, a "tooth of Buddha," an ancient Buddhist sutra on palm-leaves. The rice-wine of Shaohing is famous all over China.

Williams (Mrs E. T.) Some popular religious literature of the Chinese. (Ibid., 11-29.) Treats of Chinese "tracts" and other folk-literature, mostly poetical, for "it is easier to rhyme in Chinese than to write prose." Among others, "The Sun Classic," "The complaint of the Ox," Buddhistic sayings, "The Ethics of the Kitchen," Taoist posters, the literature of the goddess of mercy, Kwanyin, are referred to or quoted from. The average Chinese tract "contains much that makes for righteousness."

Wray (L.) The Malayan pottery of Perak. (J. Anthr. Inst., Lond., 1903, xxxiii.

24-35, 3 pls., 2 figs.) Describes implements used, process of making, etc. Pottery-making in Perak (only 4 places) is in way of extinction, since the younger women do not seem to be learning the art from the old and middle-aged who alone practise it. Perak vessels have no handles, knobs, or projections. Wooden stamps are used for marking the moist clay.

INDONESIA, AUSTRALASIA, POLYNESIA

Blake (F. R.) Sanskrit loan-words in Tagalog. (J. H. U. Circ., Balt., 1903, XXII, 63-65.) Discusses chiefly data in Kern and Pardo de Tavera, wisely rejecting many of their conclusions. A number of important words are held to be Sanskrit religious terms, titles of nobility, plant and animal names, words for large numbers, words denoting operations of the mind, words referring to the written language. The Tagalog alphabet and writing came from India.

— Analogies between Semitic and Tagalog. (Ibid., 65-66.) Notes resemblances in interrogative pronoun, verbal adjective, copulative conjunction, *verbum substantivum*.

von Bülow (W.) Die Verwaltung der Landgemeinden in Deutsch-Samoa. (Globus, Brnschw., 1903, LXXXIII, 373-377.) Interesting account of Samoan native officials and popular government. The customary law is listed under 46 items (rules, laws, offences, punishments). Curious survivals in the speech of to-day of terms which smack of cannibalism are noted on page 377. The native laws of the Samoans are such as "peoples more *civilised*" need not be utterly ashamed of.

Cameron (A. L. P.) Traditions and folklore of the aborigines of New South Wales. (Science of Man, Sydney, 1903, VI, 46-48.) Legends of the obtaining of fire (in which the codfish, water-rat, hawk, bat, etc., figure), how the emu lost its great wings; items about the Bukumurri, or "mystic people," moon-myths, soul-lore, origin of the white eyes of the crow and the quills of the porcupine.

Chalmers (J.) Notes on the Bugilai, British New Guinea. (J. Anthr. Inst., Lond., 1903, XXXIII, 108-110.) Treats

briefly of habit, tribal life, religious ideas, food, general appearance. The author considers these people "the New Guinea aborigines," and possibly the ancestors of northern tribes of Queensland.

— A vocabulary of the Bugi language, British New Guinea. (Ibid., 111-116.) About 450 words, besides numerals 1-10 and pronouns. A supplementary note by S. H. Ray informs us that "this vocabulary is an important addition to our knowledge of the languages in British New Guinea, between the Fly river and the British-Dutch boundary"—at present ten languages are known.

— Notes on the natives of Kiwai island, Fly river, British New Guinea. (Ibid., 117-124.) Treats of canoes, fishing, cooking, fire (use and legend of origin), houses, agriculture, bull-roarer, initiation-ceremonies, death and funeral, dyeing, music, tobacco-smoking, narcotics, mutilations and body-marking, dress and ornament, weapons, head-trophies, marriage, etc. The Kiwai natives do not like boiled food. The chief before marching to battle practises *coitus* as an augury. Many secret and immoral practices occur in the initiation ceremonies.

Chamberlain (A. F.) Contributions toward a bibliography of Philippine Folklore. (J. Amer. Folk-Lore, Boston, 1903, XVI, 116-121.) Lists 92 titles with occasional notes.

Clement (E.) Ethnographic notes on the Western-Australian aborigines. (Int. Arch. f. Ethnogr., Leiden, 1903, XVI, 1-16, 4 figs., map.) Treats of procuring of food, flint and glass spear-heads, the rain-maker, *tarlows* (stone-heaps for ceremonial purposes in the "willing" rites), the native doctor or *taketa*, stone carvings (very rude animal figures found on almost all the hill-tops), circumcision-rites, marriage and marriage-laws. A vocabulary of the Gnalluma tribe is given. A specimen showing the *mika*-operation was obtained by the author and is now in the University Museum, Oxford.

Erklärung eines javanischen Batikmotivs. (Int. Arch. f. Ethnogr., Leiden, 1903, XVI, 43-46, 8 figs.) Explains the *parang rusak* pattern of Javanese batik as a bird's-beak motive, borrowed possibly from New Guinea.

- Fitzner (R.)** Die Bevölkerung der deutschen Südseekolonien. (Globus, Brnschw., 1903, LXXXIV, 21-25.) Gives statistics (with discussion) of the population of Kaiser-Wilhelmsland, Bismarck archipelago, Carolines, Marianne archipelago, Marshall islands, German Samoa,—449,450, of which 864 are whites.
- Haddon (A. C.)** Maori art. (Nature, Lond., 1903, LXVIII, 35-36.) Résumés A. Hamilton's *Maori Art* (Wellington, N. Z., 1903).
- Haupt (P.)** Philippine problems. (J. H. U. Circ., Balt., 1903, xxii, 57-58.) Argues for the establishment by the American Oriental Society of a "Colonial Section," the publishing of a "Philippine Bibliography," and of a series of practical manuals of Philippine dialects, particularly Tagalog, and the extension of the work of the Bureau of American Ethnology to the Philippines.
- Holmes (J. H.)** Notes on the Elema tribes of the Papuan gulf. (J. Anthr. Inst., Lond., 1903, xxxiii, 125-134.) Treats of tribal groups (legend of origin of Ipi tribes is given), hero-legend of Lepu tribe (achievements of Haisafarai), traditional history of the Eavara, Haura, etc. A list of native names of villages is given. The cause of the division of the Ipi tribes is said to have been adultery.
- Juynboll (H. H.)** Proeven van Balineesche teekenkunst. (Int. Arch. f. Ethnogr., Leiden, 1903, xvi, 81-87, 4 pls.) Describes Balinese ms. drawings representing incidents in native poems and tales of Hindu and Mohammedan origin.
- Mencarini (J.)** The Philippine Chinese labor question. (J. China Br. R. Asiat. Soc., Hongkong, 1900-1901, N. S., xxxiii, 157-184.) Maintains the "absolute necessity of Chinese immigration to the Philippines." They are the "ideal colonists" for that country.
- Porter (R. S.)** Mindanao Moros. (So. Wknn., Hampton, Va., 1903, xxxii, 321-328.) Brief, general account with text illustrations. Pro-American; author esteems Moros superior to Tagalos.
- Schmeltz (J. D. E.)** Descriptive catalogue of a collection of ethnographical objects from the northern part of western Australia in the "Rijks Ethnographisch Museum" at Leiden. (Int. Arch. f. Ethnogr., Leiden, 1903, xvi, 17-29, 4 pls., 84 figs.) Lists 193 ethnographic objects, of which the native names, where known, are given. Of these objects Nos. 1-22 relate to food, drinks, and implements for preparing them; 23-63, dress and ornament; 64-73, fishing and hunting; 74-77, agriculture, forestry, etc., 78, handicraft; 79-188, war; 139-142, means of government, justice, etc.; 143-165, music, dancing, etc.; 166-193, worshipping of the dead, funeral, mourning, fetishism, etc.
- Seiple (W. G.)** Tagalog poetry. (J. H. U. Circ., Balt., 1903, xxii, 78-79.) Lists varieties of songs; outlines rules of prosody and gives, with translation, specimen texts of divers meters. Notable is the *kundiman* or love-song.
- The Tagalog numerals. (Ibid., 79-81.) System is decimal and 1-20 entirely native, then native and Spanish mixed. Some numerals discussed in detail.
- Shelford (R.)** On two medicine-baskets from Sarawak. (J. Anthr. Inst., Lond., 1903, xxxiii, 74-81, 1 pl.) Describes two *lupongs*, or "medicine-baskets," their contents (charms and simples), and attachments. The native names (with notes on uses) are given for the 35 charms found in the basket from Saribas river and for the 12 in that from Undup river. The baskets were the property of two Sea-Dyak witch-doctors.
- Sierich (O.)** Samoanische Märchen. (Int. Arch. f. Ethnogr., Leiden, 1903, xvi, 88-110.) German and (in most cases) native texts of Nos. xv-xxiii of Samoan märchen. Topics are: Canoe-voyage of a ghost, honor thy mother-in-law, how the giant Taneotruulu gave his sister in marriage, the cannibal giants, how the cocoa-palm came to Samoa, an unlucky marriage, snake-loves, punishment for theft.
- Wake (C. S.)** Notes on the Indian origin of the Polynesian islanders. (Am. Antiq., Chicago, 1903, xxv, 44-48.) Based on Fornander, Wheeler, etc. Compares Hawaiian *Waka* and Hindu *Vaka* and seeks Hindu etymology for *Malay*. No case at all made out.

AMERICA

- Baum (H. M.)** Antiquities of the United States. (Rec. of Past, Wash., 1903, 11, 164-174, 19 figs.) Treats of the ruins in the de Chelly, del Muerto, and

- Monument canyons, etc., in northeastern Arizona, with references to the monograph of Mindeleff. Dr Baum believes that none of the present Indians of the Southwest are related to this prehistoric people of the cliff ruins, where existed a "prehistoric center of our American civilization and culture." Among the mummies found was that of a dwarf.
- Borst Pauwels** (W. M. I.) Over de wijze van visschen met het Surinaamsche vischvergift *Koemaparie*. (Int. Arch. f. Ethnogr., Leiden, 1903, XVI, 42-43, 1 fig.) Brief note on the method of using the Surinam fish-poison known as *koemaparie*. The author in his Leipzig dissertation *Bijdragen tot de kennis der Surinaamsche Vischvergiften* (1903) gives the results of the chemical investigation of the fish-poison called *neku*, with notes on several similar poisons.
- de Brettes** (J.) Les indiens Arhouaques-Kaggabas. (Bull. Soc. d'Anthr. de Paris, 1903, 4^e s., IV, 318-357, 43 figs., 2 maps.) In this valuable paper Count de Brettes answers more or less in detail the numerous inquiries of the *questionnaire* of the Paris Anthropological Society. Special attention is given to dress, religion, etc. The plenitude of the intellectual faculties of the Kaggabas lasts till 40 years or over. Word and place memory is good. The *mama* (religious chief) is hereditary, the civil chief elective. Rude suspension bridges are built. Hearing is "extraordinarily developed." Masked dances are in vogue. Tattooing is unknown, likewise initiation ceremonies. Nominally Catholics, they are secretly heathen.
- Chickering** (Frances E.) The Hiawatha trilogy. (So. Wkmn., Hampton, Va., 1903, XXXII, 317-319.) Brief account of Taylor's musical trilogy recently rendered in Washington.
- Crosby** (H. A.) The triangular stone adze. (Wisc. Archeol., Milwaukee, 1903, II, 91-93, 2 figs.) Brief description of the triangular stone adze, more or less characteristic of Wisconsin archeological districts.
- Culin** (S.) Address by Stewart Culin, Vice-President and Chairman of Section H for 1902: America the cradle of Asia. (Proc. Am. Ass. Adv. Sci., 1903, LII, 493-500.) Supports the thesis that certain things (methods of arrow-divination, games, etc.) have had their primitive center of origin in America (particularly the southwestern U. S.) and that to that part of the world we must look for the real explanation of many Asiatic ethnological phenomena.
- Dorsey** (G. A.) Mishongnovi Antelope, Snake ceremonies. (Nature, Lond., 1903, LVIII, 111-113.) From *Report of Field Columbian Museum*.
- Doughty** (Frances A.) The small family and American society. (Ninet. Cent., Lond., 1903, LIV, 420-427.) Notes that the mother of a few children develops the maternal instinct most. The small family is appreciated by "our most refined and best educated citizens."
- Förstemann** (E.) Die Nephritplatte zu Leiden. (Z. f. Ethn., Berlin, 1903, xxxv, 533-557, 1 fig.) Discusses the Mayainscription on the nephrite plate now in the Leiden Museum, which is held to relate to the first celebration of the five-days' yearly festival to the first descent of Kukulkan from heaven, etc.
- Golder** (F. A.) Tales from Kodiak island. (J. Amer. Folk-Lore, Boston, 1903, XVI, 85-103.) English text of tales concerning the origin of light, the grouse-girl, the "unnatural uncle," the boy who became a mink, the sad fate of Uchatngiak (dropped by the raven into the sea and changed to the white whale).
- Grinnell** (G. B.) A Cheyenne obstacle-myth. (Ibid., 108-115.) English text of a tale of the pursuing head and escape of children by means of barriers made by throwing things behind them. Magic killing of animals is also a feature.
- Joyce** (T. A.) A totem-pole in the British Museum. (J. Anthr. Inst., Lond., 1903, xxxiii, 90-95, 2 pls. (7 figs.)) Describes a totem-pole from Kayang, near Masset, Queen Charlotte island, and a model totem-pole from Masset. The legends explanatory of them as given by the Indians are recorded. The two poles are almost duplicates, but the legends differ considerably.
- Latcham** (R. T.) Notes on Chilean anthropology. (Ibid., 167-178, 3 figs.) Details of measurements of 30 skulls from various parts of Chile. The Chilean skull is generally of small capacity, with an average index of 78-80, and the results of examination of 240 skulls from southern and 139 from northern Chile. Besides a large-headed and a small-headed type, there exists another, the most numerous of all, "a product of the other

two," the Chilean population being far from homogeneous. About a third of the skulls approach the Iberian type and about one-seventh that of the Araucanians.

Lawson (P. V.) The occurrence of obsidian implements in Wisconsin. (Wisc. Archeol., Milwaukee, 1903, II, 95-99.) Lists, with brief descriptive notes, 17 obsidian specimens from various parts of the state. Its presence there is due to aboriginal trade.

León (N.) Los Matlatzincas. (Bol. Mus. Nac. de Mex., 1903, II, ep. I, 59-82.) Treats of day and month names. Author now attaches Matlatzincan to Otomian stock.

— Los Tarascos. (Ibid., 113-129, 132-149.) This article, of which two sections appear here, is intended as an introduction to the catalogue of the Tarascan collection in the Museo Nacional de México. Cites freely from older authorities and reproduces eight figures from mss. relating to tribal migrations.

Payer (Hr) Ueber einen am Amazonenstrom gebräuchlichen Trommel-Apparat. (Z. f. Ethn., Berlin, 1903, xxxv, 481-483.) Briefly describes a wooden drum, struck by a rubber stick, of the Piratapujos Indians, known as *troceno* and serving as a primitive telephone. The festal dress and ornamentation of these Indians is also described. In the discussion Dr von den Steinen recalled the *cambarisei* of the Catuquinari, a sort of "telegraph."

Peet (S. D.) Pyramids and palaces in America. (Am. Antiq., Chicago, 1902, xxiv, 429-450.) General discussion, illustrated.

— Palaces and temples in Central America. (Ibid., 1903, xxv, 1-24.) General discussion, illustrated.

— The southern mound-builders; their works and relics. (Ibid., 215-246.) Illustrated review of data. Author holds that symbol and relics prove that "there was a progressive series from the north to the south, consisting of animal-worship, etc."

— Recent discoveries in Honduras. (Ibid., 49-64, ill.) Based on Owen, Maler, etc. Author holds that "there was a development on the soil of America which was certainly equal to that found in Babylonia or in Egypt at the opening of history."

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have reached a brilliant development without the interference of Europe.

Ward (D. J. H.) Historico-anthropological possibilities in Iowa. (*Iowa J. of Hist. and Pol.*, Iowa City, 1903, 1, 47-76.) Topics considered are: Anthropology as a science, divisions of anthropology, geological preparation in Iowa, the approach of the white man, the white man's final possession, the first inhabitants, the mound-builder period, what became of the mound-builders, and who succeeded them? The red men, Black Hawk, Keokuk, Ma-tau-equa, the mounds of Iowa (with distribution-map), the mound-builder's plain, Indian names as reminders, the Davenport Academy, Professor Starr's work, the scientific and educational argument, the moral argument. The scientific study of the Indian is our debt to him.

— Anthropological instruction in Iowa. (*Ibid.*, 312-328.) General discussion and outline of curriculum, with practical suggestions. Author notes that McGee, Starr, Holmes, and Russell are either Iowans or have had to do with researches and education in Iowa. Besides these interesting papers Dr Ward has published two suggestive pamphlets, *Anthropology: a Synopsis of the Science*, and *The Human Races: A Sketch of Classifications*. (See *Am. Anthropologist*, vol. 5, p. 554.)

Williams (T.) Ethnic factors in South America. (*Ann. Amer. Acad. Pol. & Soc. Sci.*, Phila., 1903, XXII, 25-31.) Points out the survival-value of the Indian. Of 40,000,000 people in South America, perhaps 8,000,000 are of pure white blood. As a result of the blendings the Indian may come to the front

again in some of the Spanish American republics.

Winchell (N. H.) Was man in America in the glacial period? (*Bull. Geol. Soc. Amer.*, Minneapolis, 1903, XIV, 133-152.) After considering the pre-glacial surface of the country, the advent of the ice-sheets, origin and stratification of the loess, the Lansing skeleton (the find is accepted as authentic), Dr Winchell concludes that "man existed in North America at the time of the Iowan epoch of the ice-sheet," and that the skeleton was buried by the muddy overflow of the Missouri valley, augmented by materials from the Kansas drift.

Wright (F. B.) The mastodon and mammoth contemporary with man. (*Rec. of Past, Wash.*, 1903, 11, 242-252, 10 figs.) Résumés present knowledge of habitat, distribution, cause of extinction, contemporaneity with man, etc. Author's conclusion is that while contemporaneity is undoubted in Europe, the evidence for North America is "more scattering and less definite."

— Glacial man. (*Ibid.*, 259-271, 9 figs., 3 maps.) Treats of the evidence as to glacial man in Europe and America, Kent's Hole, the Trenton gravels, etc. Concludes that the antiquity of man as proved by the glacial period is not much if any greater than that of the Nile valley and Euphrates civilizations.

Wright (G. F.) The age of the Lansing skeleton. (*Rec. of Past, Wash.*, 1903, 11, 119-124, 4 figs.) In this brief paper the author résumés recent opinions and accepts the view that "the Lansing skeleton was buried before the close of the Iowan epoch of the glacial period," say 12,000 years ago.

ANTHROPOLOGIC MISCELLANEA

Was John Lederer in Either of the Carolinas? — The title of the work to which I shall refer is: *The Discoveries of John Lederer in Three Several Marches from Virginia, to the west of Carolina, and Other Parts of the Continent; Begun in March, 1669, and ended in September, 1670.* Translated from the Latin by Sir William Talbot, London, 1672. (Reprinted, Rochester, N. Y., 1902.)

The preface of the translator and original editor informs the reader that the author, after the return from his expeditions, "met nothing but affronts and reproaches" in Virginia, and was "forced by this storm into Maryland," from which fact, knowing Lederer was sent out by the Governor of Virginia, it is presumable that but little faith was placed in his statements. Following this preface is a map, which it is asserted was made by the author's "own hand" and on which are marked by dotted lines the routes of the "three marches" Lederer claims to have made.

Our present criticism refers wholly to the account of the "second expedition" so far as it relates to Lederer's journey into the "Province of Carolina." He begins the account of his journey after separating from the party sent by the governor to accompany him but who refused to pass beyond the limits of the colony, by stating that they parted as friends, and that he, with one Susquehanna Indian, changed his course "from west to southwest and by south, to avoid the mountains." Traveling from the fifth to the ninth of June he reached Sapon on a branch of "Rorenock [Roanoke] river," apparently on Dan river. From this point he went "south and by west" fifty miles to Akenatzy, an island "upon a branch of the same river" (Roanoke), which he reached June 12th. Thence some "thirty odde miles" in a "south-southwest course," to the Oenock Indians. Forty miles farther in a "west-southwest" course he reached "Watary"; no stream is named, but the place is located on his map at the extreme head of the middle branch of the Roanoke. As Watary may be identified with Wateree, it would seem that Lederer had traveled well-nigh across North Carolina without encountering any other river than the Roanoke and without meeting with any stream which flowed toward the south or southeast. Yet, had he actually reached the section mentioned, he would have found that the streams in that region flowed southeastward. He states that from Watary he went "a west-course for near thirty miles" to Sara, "not far distant from the mountains, which here lose their

height, and change their course and name: for they run due west, and receive from the Spaniards the name of Suala." His journey from this point to Ushery is described as follows:

"From Sara I kept a south-southwest course until the five and twentieth of June, and then I reached Wisacky. This three-days march was more troublesome to me than all my travels besides: for the direct way which I took from Sara to Wisacky, is over a continuous marish overgrown with reeds, from whose roots sprung knotty stumps as hard and sharp as flint. I was forc'd to lead my horse most part of the way, and wonder that he was not either plunged in the bogs, or lamed by those rugged knots.

"This nation is subject to a neighbour king residing upon the bank of a great lake called Ushery, invironed of all sides with mountains, and Wisacky marish; and therefore I will detain the reader no longer with the discourse of them, because I comprehend them in that of Ushery.

"The six and twentieth of June, having crossed a fresh river which runs into the lake of Ushery, I came to the town, which was more populous than any I had seen before in my march. The king dwells some three miles from it, and therefore I had no opportunity of seeing him the two nights which I stayed there. This prince, though his dominions are large and populous, is in continual fear of the Oustack-Indians seated on the opposite side of the lake; a people so addicted to arms, that even their women come into the field, and shoot arrows over their husbands' shoulders, who shield them with leathern targets. The men it seems should fight with silver-hatchets: for one of the Usheryes told me that they were of the same metal with the pomel of my sword. . . .

"The water of Ushery-lake seemed to my taste a little brackish; which I rather impute to some mineral-waters which flow into it, than to any saltness it can take from the sea, which we may reasonably suppose is a great way from it. Many pleasant rivulets fall into it, and it is stored with great plenty of excellent fish. I judged it to be about ten leagues broad: for were not the other shore very high, it could not be discerned from Ushery. How far this lake tends westerly, or where it ends, I could neither learn or guess. Here I made a days stay. . . .

"To avoid Wisacky-marish, I shaped my course northeast; and after three days travel over hilly ways, where I met with no path or road, I fell into a barren sandy desert, where I suffered miserably for want of water; the heat of the summer having drunk all the springs dry, and left no signe of any, but the gravelly chanel in which they run: so that if now and then I had not found a standing pool, which provident nature set round with shady oaks, to defend it from the ardour of the sun, my Indian companion, horse and self had certainly perished with thirst. In this distress we travelled till the twelfth of July, and then found the head of a river, which afterwards proved Eruco." (Pages 20-22.)

As the Usheries are identified with the Catawbas, who were then in their historic seat, Lederer must have reached the border of South Carolina. As there is no lake in all that region, how are we to explain his statements? Did his visit take place, as has been suggested, in a rainy

season during an overflow of the streams which spread over the bottomlands, making a broad expanse of water? Is it possible that an explorer sent out by the Governor of Virginia because of his supposed ability would fail to learn by his own observation or through information from the Indians that the supposed lake was merely an overflow? That such overflows did sometimes occur in the streams of this particular section is testified to by Lawson, who traveled through the region in 1700; but that it was an overflow he soon perceived, the swift current and the trees making this apparent to every one. But this supposition is forbidden by Lederer's description of it, as above quoted, which makes it a true lake, as does his map, and also by his additional statement that the season had been one of excessive drought. He says that three days later, on his return by another way, he fell into a barren, sandy desert where he suffered from want of water, "the heat of summer having drunk all the springs dry, and left no signe of any, but the gravelly chanel in which they run." It is therefore evident that the supposition that what he saw was a great overflow due to much rain is untenable. Early explorers of regions little known and unmapped are liable to error, but in this case it is simply a matter of veracity. Lederer's statement is untrue if he visited the section mentioned, as he saw no lake; and if he did not visit it, the claim of having done so is false.

There is, however, another statement which shows that Lederer did not make the journey, and that his claim to that effect cannot be accepted as true. "To avoid Wisacky-marish," he says, "I shaped my course northeast," and this corresponds exactly with his map, which marks the return as northeast, but entirely south of Roanoke river until he reached the Virginia border; and yet in all this distance — from the southwest border of North Carolina until he reached the "Eruco," or Neuse river, in the northeastern part of the state — he, according to the narrative and map, crossed no stream but traveled for fourteen days through a sandy desert (*deserta arenosa*). His statement is that after "three days travel" he fell into a barren, sandy desert, where he suffered from thirst, so that if now and then he had not found a standing pool his Indian companion, horse, and self had perished with thirst. "In this distress," he continues, "we travelled till the twelfth of July, and then found the head of a river, which afterwards proved [to be] Eruco" (which, although he connects it with the Roanoke, is evidently the Neuse). Hence this veracious explorer, according to his own narrative, traveled diagonally through North Carolina from the southwest border to the northeast portion without crossing a single stream of sufficient size to quench his thirst —

neither the Yadkin nor Cape Fear nor any of their numerous tributaries were encountered, the entire journey being over a sandy desert !

It is evident, therefore, that all the local items mentioned in the account of this journey must have been obtained from the Indians in the sections which Lederer actually visited, and that the journey into the Carolinas is a myth.

CYRUS THOMAS.

Ethnological and Archeological Survey of California. — President Benjamin Ide Wheeler of the University of California and Director F. W. Putnam of the Department of Anthropology, have made the following announcement :

“ For several years the University of California, through its Department of Anthropology and by the liberal assistance of Mrs Phoebe A. Hearst, has been engaged in an Ethnological and Archeological Survey of the state. A large amount of material, illustrative of Indian life and culture in past and present times, has been obtained and will form an important part of the anthropological collections which will in the future be exhibited in a Museum of the University at Berkeley. At the present time this collection, with others of the department, is temporarily placed in one of the buildings of the Affiliated Colleges belonging to the University in San Francisco. Here the large and valuable collections are safely cared for until the permanent museum building is secured.

“ Systematic explorations are being made of the later gravel deposits, of several caves, and of the ancient shellheaps, in order to ascertain when man first occupied this region. The languages of the existing Indians are being studied by experts of the department ; the customs and mythology of the different tribes are being carefully recorded ; and collections illustrating their arts are being formed for the Museum. A study of the physical characters of the various groups of Indians, combined with that of the skeletons found during the archeological explorations, is being made in order to determine the physical relations of the Indians of California with those of other regions. By correlating the physical characters, the particular cultures of the past and present Indians, and the various linguistic stocks or families still extant, it is hoped to solve the great problem of the relationship of the numerous groups of Indians in California, and their relationship with peoples of other parts of the continent and possibly with certain tribes of Asia.

“ Nowhere in America has there been such a diversity of Indian languages as in California, a condition which has long puzzled anthropologists. During the last five years more investigations of these languages

have been made by the University and by eastern institutions than in all previous time. These Indian languages are now fast disappearing. Several are at the present moment known only by five or six and others by twenty or thirty individuals, and hardly a year passes without some special dialect, or even language, becoming extinct. For this reason it is desired that students should be instructed in the methods of recording and studying Indian languages, and then devote themselves to special research. The University is therefore giving instruction in this branch of linguistics with the hope of preparing students to carry on the research before the opportunities pass away. Similar reasons apply to researches in other divisions of ethnology, and in archeology; hence the training of students in these subjects is also undertaken by the Department of Anthropology.

"The officers of the department make a special appeal to persons in all parts of the State and adjacent regions for aid in this survey. Hundreds of Indian objects are found annually, which if carefully labeled as to where and how found and sent to the University, would, when brought together for comparative study, aid in the settlement of many important questions. The distribution of a particular kind of stone implement or of an ancient form of basket, and of many other objects of Indian manufacture (even the peculiar stone of which an implement is made is of great importance), will aid in determining the distribution of a tribe or group of which other records may be lost or so uncertain that just such confirmatory evidence to establish a particular point is required.

"Information relating to the location of caves, shellheaps, old burial places, ancient village sites, and scattered fragments or survivors of nearly extinct tribes, is earnestly solicited, that such may be investigated by the department and may be correctly reported on its ethnological and archeological maps of the State.

"The University is by this survey carrying on a research of great importance in obtaining a knowledge of the first peopling of the Pacific coast and of the early migrations, and of the relationships of the recent and present Indians, a research that is required by anthropologists and by all interested in the early history of man. This work has been well begun, but assistance of many kinds is needed for its rapid progress. This assistance it is hoped will be given to aid the University of the State in an undertaking of such general interest."

The Department of Anthropology of the University has in press or in preparation seven volumes pertaining to Græco-Roman and Egyptian archeology, American archeology and ethnology, and anthropology. The memoirs of direct interest to American students are *Life and Cul-*

ture of the Hupa, and *Hupa Texts*, by Pliny Earle Goddard; *The Languages of the Coast of California, South of San Francisco*, by A. L. Kroeber; *Explorations in Peru* (part 1, *Ruins of Moche*; part 2, *Huamachuco, Chinch, Ica, Pisco, Huaitara*), by Max Uhle; *The Book of Life of the Ancient Mexicans* (an anonymous Hispano-American manuscript preserved in the Biblioteca Nazionale Centrale, Florence, Italy), by Zelia Nuttall. The last mentioned work, which is eagerly awaited by all students of Mexican ethnology and archeology, will consist of (I) an Introduction and colored fac-simile of 80 pages, and (II) Translation and Commentary.

The Coast Yuki of California. — In the April June issue of the *Anthropologist* (pp. 375-376) Mr P. E. Goddard showed that the Kato or Kai Pomo of Cahto and Laytonville, Mendocino county, California, are not Pomo but Athabaskan. A visit made to the Indians still living on the coast to the west of the Kato, mostly about Westport, proved these to be of Yuki stock, speaking a dialect somewhat differentiated, though rather regularly, from that of the Yuki proper of Round valley. The territory of these Coast Yuki extended from near Usal on the north along the coast to about Ten Mile river on the south. In the interior, Jackson Valley creek, one of the headwaters of the south fork of Eel river, is said to have formed the boundary between them and the Kato. The Kato thus constituted the southernmost extension of Athabascans on the Pacific coast, their territory forming a tongue that separated the Yuki proper from the Coast Yuki.

These facts, together with those ascertained by Mr Goddard, show previous statements as to the geographical boundaries of both the Pomo and the Yuki families to have been considerably in error. The map accompanying Powers' *Tribes of California* shows one unbroken Pomo area and two for the Yuki; Powell in his *Indian Linguistic Families* gives two Pomo and two Yuki areas. Actually the Pomo are all in one continuous area, while the Yuki occupy three detached territories. These three are, first, the territory in and about Round valley, not reaching anywhere to within twenty miles of the sea, but including on the south the territory of the Huchnom, known locally as Redwoods and called by Powers Tatu; second, the much smaller territory of the Coast Yuki to the west; and third, the equally confined separate area occupied by the so-called Wappos between Geyserville and Calistoga. In regard to the Wappos information has also been incomplete. Powers states that though primarily mountaineers, they held also the part of the Russian river valley lying between Geysersville and Healdsburg. He gives, how-

ever, an impossible story about a treaty of cession between them and the neighboring Pomo in regard to this land, and the map that accompanies his volume omits the Wappo from the valley. Inquiry from Wappos now living on Russian river at Alexander valley near Healdsburg confirms the fact that the plain from this spot northward to the vicinity of Geyserville was Yuki, not Pomo, territory.

A. L. KROEBER.

A New Moquelumnan Territory in California. — The Indians known locally as Coyote Valley Indians and living about eighty miles north of San Francisco on the headwaters of Putah creek in the southern part of Lake county, California, have heretofore been regarded as Wintun. They are so designated on the linguistic map in Powers' *Tribes of California*. Recently, during an ethnological investigation of this part of the state, vocabularies were taken from Coyote valley. On comparison with the vocabularies in Powers, as well as with some obtained in Marin county, the Coyote Valley language proved to be a Moquelumnan dialect.

The territory of this branch of the Moquelumnan stock was ascertained to have been quite limited in extent, comprising part of the upper drainage basin of Putah creek and a certain area on the northern side of the watershed between Putah and Cache creeks, extending as far north as the extreme southeastern shore of Clear lake and the south bank of Cache creek for a few miles down from its source. This area consists of territory heretofore assigned to the Wintun — in Putah and Cache creek basins — and to the Pomo, on Clear lake. This Moquelumnan group was accordingly isolated and about forty miles north of the Moquelumnan inhabitants of Marin and southern Sonoma counties, who were themselves detached from the main body of Moquelumnan tribes east of the San Joaquin river. Powers, in speaking of the Wintun, says: "In the head of Napa Valley were the Wappo, and in Pope and Coyote Valleys there was spoken a language now nearly, if not quite, extinct." This statement would seem to have been based on indefinite information of the Coyote Valley language.

In the course of the same investigation it was ascertained that the Yukian Wappo, whose territory has been said to have reached only a short distance south of Calistoga at the head of Napa valley, really held the entire upper half of this valley, extending nearly to the present town of Napa, about twenty miles farther south than previously believed.

S. A. BARRETT.

A Laguna Ceremonial Language. — While conducting studies in physical anthropology among the Queres or Keresan Indians of the pueblo of Laguna, New Mexico, in the interest of the Hyde Expedition, for the

eral groups of primitive people from the archipelago will accompany the exhibit. Arrangements have been definitely made for several Igorot families, and Dr Neiderlein, member in charge of the Exposition Board in the islands, has under way negotiations looking toward the taking of a group of Negritos, of Moros from Lake Lanao, Mindanao, and two or three other groups of wild mountain people. If the plans carry there will be an unexcelled opportunity given American anthropologists to study many phases of the primitive life of the Philippines, and as soon as plans have matured sufficiently it is Dr Jenks' purpose to present the facts to the various institutions of research and teaching in the United States and Europe so that those interested may know and avail themselves of the opportunity to see the primitive Filipino quite as he is at home.

Oath by the Arrow. — In administering oaths to plaintiffs and defendants appearing before the three Indian judges of the Court of Indian Offenses of the Crow tribe, a tin arrow is used. It is held in high and sacred esteem by all the older Crows, and it was claimed that no one can touch it and tell an untruth without meeting with a mishap such as bodily injury, the loss of a horse or other property, or even death. The pointed end of the arrow is painted red to resemble blood.

The present custom of swearing by the arrow can be traced to the following method of settling disputes, which arose between two or more warriors over the right of ownership of an enemy's scalp or of a captured horse or gun.

A day was designated by the councillors for hearing the claims of the contending warriors. During the early hours of the appointed day the camp crier would give notice of the place and time of the trial. On assembling at the designated locality a buffalo skull was placed upon the ground, facing eastward, and around it the councillors of the tribe seated themselves in a circle. All interested in the case were attired in their best costumes.

After the head-chief had stated the cause of the trial, deplored the necessity of it, and impressed on the contestants the sacredness of the oath each would be required to make, he took an arrow, pierced a piece of buffalo meat with it, placed it across the buffalo skull, and returned to his position in the circle. The contestants for the trophy were then called separately by the head-chief to come within the circle and to take oath to the statements they had to make. As each one in turn approached the center and made his statement, he picked up the arrow with the buffalo meat still upon it, slowly raised and pointed it to the sun with his finger upon the point, attested that his statement was true, invoked protection, and finally returned the arrow to the skull.

No contestant was adjudged guilty of perjury until he had met with some misfortune, when the true ownership was declared in favor of his opponent at the trial.

Many were afraid to touch the arrow after making their claim.

S. C. SIMMS.

Fourteenth International Congress of Americanists. — The Thirteenth Session of the International Congress of Americanists, held in New York, October, 1902, resolved "that the next session be held in Stuttgart, 1904, and that the matter of arranging the same be entrusted to Graf von Linden, Professor von den Steinen, and Professor Seler." The committee of organization has announced that the Fourteenth Session will be held in the city named from August 18th to 23d, 1904, under the patronage of His Majesty, King Wilhelm II of Württemberg. As usual the subjects to be discussed will relate to (*a*) the native races of America, their origin, distribution, history, physical characteristics, languages, inventions, customs, and religions; (*b*) the monuments and the archeology of America; (*c*) the history of the discovery and occupancy of the New World. The membership fee of three dollars (which includes the cost of the printed report) should be remitted by draft or money order to Mr Theodor G. Wanner, treasurer, Königstrasse 35, Stuttgart, Germany. Communications pertaining to the presentation of papers on general anthropology and ethnology should be addressed to Professor Karl von den Steinen, Hardenbergstrasse 24, Berlin-Charlottenburg; those relating to archeology, to the history of the discovery of the New World, or to Central American subjects should be sent to Professor Edward Seler, Kaiser Wilhelmstrasse 3, Steglitz, near Berlin.

The Committee of Organization consists of forty-five distinguished men of science and letters, of whom Dr von den Steinen is president; Karl Graf von Linden and Dr Edward Seler, vice-presidents; Dr Kurt Lampert, general secretary (Stuttgart), and Mr Theodor G. Wanner, treasurer.

It is sincerely hoped that Americanists of the New World will unite in making the Stuttgart session of the International Congress a memorable one, even should it not be possible for them to be present in person. Those who will be so fortunate as to attend the session will be well repaid. The meetings of the Congress will be held in the festal hall of the Koenigsbau, and after the session an excursion will be made to Schweizerbild and Kesslerloch, where Dr J. Nuesch conducted his famous explorations of prehistoric remains. The town of Schaffhausen will tender a banquet to the Congress, followed by an illumination of the cataracts of the Rhine.

The committee of organization urge that titles of papers to be presented in person or otherwise be sent as soon as possible to General Secretary Lampert.

Eighth International Geographic Congress.— Pursuant to the action of the Seventh International Geographic Congress held in Berlin in 1899, the geographers and geographic societies of the United States are considering plans for the ensuing Congress, which is to convene in September, 1904. It is proposed to have the principal scientific sessions in Washington early in the month, and to have social sessions in New York, Philadelphia, Baltimore, and Chicago, with a final session in conjunction with the World's Congress of Science and Arts in St Louis. It is provisionally planned also to provide an excursion from St Louis to Mexico, and thence to points of geographic interest in western United States and Canada. A preliminary announcement is in press and will shortly be issued to officers and members of geographic societies in all countries, and to geographers who may express interest in the Congress and its work. Details have been entrusted to a committee of arrangements made up of representatives from geographic societies in all parts of the United States. The officers of the committee are: Dr W J McGee, chairman; Mr John Joy Edson, treasurer; and Dr J. H. McCormick, secretary. The office of the committee is in Hubbard Memorial Hall, Washington, D. C., where communications may be addressed.

International Congress of Prehistoric Anthropology and Archeology.— At the last session of the Congress held at Paris in 1900, Vienna was designated as the next place of meeting, and a number of persons residing there were invited to constitute a committee of organization. This committee has had several meetings, interest has been aroused, and the Minister of Public Instruction has offered a contribution toward the expenses of the next Congress. The committee has been making an effort to have the rule as to the exclusive use of the French language at the Congress amended in favor of the other principal languages of Europe. The matter was finally taken charge of by Sir John Evans, and an addition to the rule as to the French language, signed by several distinguished specialists, was proposed, permitting the use of German, English, and Italian in oral communications and discussions. It was thought that the meeting at Vienna was assured, when an unexpected difficulty arose through the objection of the committee of organization in Paris, the president finding the proposed amendment unsatisfactory. The situation being thus, it was thought best to abandon the plan to meet at Vienna, although this was regretted on account of the interest aroused

and the active preparations already made to that end. The date and place of meeting have therefore not yet been definitely fixed, but it is hoped that a satisfactory agreement will soon be reached.

Preservation of Antiquities. — At a meeting of the Anthropological Society of Washington held December 1, a committee of five members was appointed to consider and to report on ways and means for the preservation of antiquities in the United States. The committee submitted its report at the meeting of the Society held December 15, and recommended the adoption and circulation of the following petition to Congress :

TO THE SENATE AND HOUSE OF REPRESENTATIVES OF THE UNITED
STATES OF AMERICA IN CONGRESS ASSEMBLED :

Whereas, From an historical and scientific standpoint, great damage is daily committed in and about the prehistoric ruins and monuments located on lands belonging to the United States, by curiosity hunters, tourists, or persons in the employ of others in furtherance of commercial ventures, or by expeditions working directly in the interest of public and quasi-public bodies, whereby many of said prehistoric monuments and ruins are damaged beyond repair, and relics of primitive origin and of great historic value are scattered and destroyed, thereby rendering them valueless as objects of scientific study for the illustration of the primitive history of America ; and,

Whereas, With few exceptions the enlightened nations of the world have passed laws declaring their archeological monuments and prehistoric objects to be the property of the nation, and have prohibited, under severe penalties, the removal of the same by exploration or excavation, or by alienation thereof without the express authorization from some legally constituted body ;

Therefore, your petitioners pray the Congress of the United States to enact a law or laws governing the right of collection, exploration or excavation in or adjacent to any prehistoric monuments and ruins on Government lands without the express written authority of such person or persons as Congress may designate, and your petitioners further pray (1) for the passage of a law prohibiting the exportation of prehistoric objects from the United States except under such restrictions as Congress in its judgment may establish ; (2) that so much of all lands belonging to the United States as will assure the protection of its archeological monuments, ruins, pyramids, mounds, tombs, buildings, or other fixed objects illustrative of the history of the primitive races of America may be withdrawn from settlement, or alienation ; (3) that all antiquities, movable and immovable, found on said lands, belonging to the Government of the United States, which may be of interest in the study of the early and primitive history of the peoples of North America, be declared to belong to the Government and people of the United States, and (4) that their

removal from said lands, or their exportation from the United States, except on the written authority of some legally constituted person or body, be prohibited; (5) that to injure or destroy or deface any of said archeological monuments, ruins, and other fixed archeological remains, or to take and carry away any of the said movable objects from said Government lands, be declared a misdemeanor punishable by fine and imprisonment, unless done in pursuance of written authority from some legally designated person or body, and (6) that said authorities may grant such permission only to National, State, Municipal, or other legally incorporated Museums in the United States, and that provision be made for the forfeiture of any of the articles enumerated to the United States on conviction of violation of the law, and that said objects shall be deposited in some legally designated depository, and not to be removed therefrom unless in conformity to law.

The committee was continued and was instructed to draft a bill for presentation to Congress for the purpose of protecting the monuments, ruins, and other antiquities on all Government reservations. As this movement must commend itself to all persons interested in the protection of American antiquities, it is hoped that the petition will be as widely circulated and as freely signed as its importance merits. Copies of the petition will be sent to any address by Dr Walter Hough, Secretary of the Anthropological Society of Washington, U. S. National Museum, Washington, D. C.

Cliff Dwellings National Park.—A bill creating the Colorado Cliff Dwellings National Park (H. R. 6784) has been introduced in the House of Representatives by Mr Shafroth, of Colorado. The bill provides for the reservation of a tract of land in Colorado comprising "all of the top of the Mesa Verde not in the Southern Ute Reservation," and its control by the Secretary of the Interior, who shall provide for its management and "for the preservation from injury or spoliation of the ruins and other works and relics of prehistoric or primitive man within said park, and, as far as possible, for the restoration of said ruins." Provision is made also for the examination and excavation of the ruins for the benefit of any reputable museum, university, college or other recognized scientific or educational institution, "with a view to increasing the knowledge of such objects and aiding the general advancement of archeological science."

Frank Russell.—Although his serious illness had long been known, the death of Dr Frank Russell, on November 7, at Kingman, Arizona, whither he had gone in search of health, came as a distinct shock to his friends and co-workers in anthropology. Dr Russell was born at Fort Dodge, Iowa, August 26, 1868, and was therefore one of

the younger students of the science. He was graduated in 1892 from the University of Iowa, under the auspices of which he joined an expedition, headed by Professor C. C. Nutting, in June, 1891, to the Grand Rapids of Saskatchewan river and to a point sixty miles above, where the river debouches into Cedar lake. Fired with enthusiasm over his summer's work, young Russell requested and was granted permission the following year to undertake an expedition to the far north — the territory beyond Great Slave lake, exploring alone the vast and lonely regions of the Slavey, Dogrib, Yellow Knives and Eskimo tribes between Fort Providence and Bathurst inlet, that of the Chipewyans and Crees to the southward of this area, and Mackenzie river from Great Slave lake to its mouth, thence to Herschel island in the Arctic sea. That the young explorer ever returned from his two and a half years of journeying over this inhospitable Arctic wilderness is due to good fortune and to an indomitable will that overcame every cruel obstacle, that finally gave to anthropology extensive knowledge of the hitherto little-known interior tribes, and to natural history a fund of information regarding the mammals, birds, fish, insects, and fossils of the region. Russell's sole recompense was shattered health and the satisfaction that comes from work well done.

In 1895 his university honored him with the degree of S.M.; in the following year he was appointed instructor in anthropology in Harvard University, which gave him the degrees of A.B. in that year, A.M. in 1897, and Ph.D. in 1898. In 1901 he became associated with the Bureau of American Ethnology and pursued field studies among the Pima and Papago tribes of southern Arizona. While connected with Harvard University Dr Russell prepared for publication his *Explorations in the Far North*, which was issued by the University of Iowa in 1898 (8°, viii, 290 pp., map and ill.). This is his most important work thus far, but the Bureau of American Ethnology has in preparation for publication his memoir on the tribes of southern Arizona. Dr Russell was a lucid and succinct writer and a clear and convincing speaker. He generously and frequently gave the benefit of his knowledge to scientific and other organizations, of a number of which he was an active member. He served as Vice-President (Section H) of the American Association for the Advancement of Science, was President of the American Folk-Lore Society, and was a councillor of the American Anthropological Association. His genial companionship and his inspiring enthusiasm for anthropologic work will be missed by all who were honored by his acquaintance.

F. W. H.

George Julius Engelmann, surgeon, gynecologist, and a member of the American Anthropological Association, died suddenly at Nashua, N. H., November 16. Dr Engelmann was born in St Louis, July 2, 1847; he was graduated from Washington University in 1867, receiving the degree of A.M. in 1870; he studied medicine at the universities of Tübingen, Berlin, and Vienna, 1867-1873, receiving the degree of M.D. at Berlin in 1871 and of Master of Obstetrics at Vienna in 1872. He was a surgeon in the Franco-Prussian war, 1870-71; practised in St. Louis 1873-95, and afterward in Boston. Dr Engelmann was an extensive traveler, seeking recreation in ethnologic and archeologic research. His principal collection of Missouri flints and pottery is in the Peabody Museum at Cambridge, while parts are represented in the National Museum at Washington and in the museums at Berlin and Vienna. Dr Engelmann was an active and honorary member of many medical and other learned societies and was the author of numerous works bearing chiefly on gynecology. Of general anthropological interest are his *Labor Among Primitive Peoples*, St Louis, 1882 (German transl., Vienna, 1884; French transl., 1886); *The Health of the American Girl*, Trans. Soc. Surg. and Gynecol., 1890; *The American Girl of To-day*, Trans. Am. Gynecol. Soc., 1900; *The Influence of Modern Education on Functional Development*, 1900; *The Increasing Sterility of American Women*, 1900; and *Age of First Menstruation on the North American Continent*, 1901.

Howard B. Wilson. — In the death of Howard B. Wilson (H. U., '03) at Willows, California, on August 4th, anthropology has lost a student and worker of great promise. Mr Wilson took deep interest in anthropological work during his college course, taking honors at graduation in that subject. He left Cambridge for California immediately after commencement, as a member of the Huntington Expedition of the American Museum of Natural History. It had been his intention to spend the summer in studying the Wintun and Yana tribes in northern California, but after little more than ten days in the field, he was stricken with typhoid fever, which terminated unexpectedly in heart failure after an illness of about two weeks. In the short time during which he had been at work, Mr Wilson had obtained much excellent material, and his death will be keenly felt by all who are interested in the development of anthropological work in California.

R. B. D.

Henry Carrington Bolton, whose unfortunate death, in his 61st year, occurred at Washington, D. C., November 19th, was celebrated in the fields of chemistry, bibliography, and folklore. It was probably his deep interest in the history of the science of chemistry — of its lowly begin-

nings in alchemy — that developed his love for the study of folklore and to which a number of valuable contributions to this subject are due. The most important of these is his *Counting-out Rhymes of Children: Their Antiquity, Origin, and Wide Distribution* (London, 1888). Among Dr Bolton's periodical contributions to the subject of folklore are: *Language Used in Talking to Domestic Animals*; *Seega, an Egyptian Game*; *Gombay, a Festal Rite of Bermudian Negroes*; *Some Hawaiian Pastimes*; *The Porta Magica, Rome*; *The Game of Gorse*; *Fortune-telling in America To-day*; *Armenian Folklore*; *A Modern Oracle and its Prototypes*; *The Vintner's Bush — A Survival of Twenty Centuries*.

THE SACAJAWEA STATUE ASSOCIATION, of which Mrs Eva Emery Dye, of Oregon City, Oregon, is president, has as its object the erection of a statue, at a cost of \$7,000, to the Shoshoni woman whose name the Association bears. It is proposed to erect the statue temporarily on the grounds of the Lewis and Clark Centennial Exposition at Portland, Oregon, in 1905, and later to give it a permanent place in one of the city parks. Sacajawea was the heroine of the Lewis and Clark expedition, serving as interpreter and guide, procuring food for the party when in dire want, and saving the journals at the risk of her life. The membership fee is fifty cents.

PROF. EDGAR L. HEWETT, president of the New Mexico Normal University at Las Vegas, has published a *Syllabus of Lectures on Anthropology* designed to deal with certain elementary phases of the subject in an attempt "to lay a foundation for the more general application of the data of anthropological science to the scientific study of education." That the practical importance of anthropology should be more highly appreciated in a normal university of one of our territories than it is in better known educational establishments in many of the states is not without significance.

THE BERLINER GESELLSCHAFT FÜR ANTHROPOLOGIE, ETHNOLOGIE, UND URGESCHICHTE has elected, as corresponding members, Mr W. H. Holmes, chief of the Bureau of American Ethnology at Washington; Dr W J McGee, president of the American Anthropological Association; Prof. F. W. Putnam, curator of the Peabody Museum at Cambridge, and Dr A. C. Haddon, ex-president of the Anthropological Institute of Great Britain and Ireland. Mr Holmes has also been elected a corresponding member of the Swedish Society for Anthropology and Geography.

BRITISH ASSOCIATION GRANTS. — The following grants for research work in anthropology were made by the British Association for the Ad-

vancement of Science at its meeting held recently in Southport : Sir John Evans, Archeological and Ethnological Researches in Crete, £100. Dr R. Munro, Researches in Glastonbury Lake Village, £25. Prof. A. Macalister, Anthropometric Investigation on Egyptian Troops, £10. Dr A. J. Evans, Excavations on Roman Sites in Britain, £25.

WILHELM HEIN, Ph.D., associate custodian of the anthropologic-ethnographic section of the Royal Museum of Natural History and privat-docent in the Royal University of Vienna, died November 19th, aged forty-three years. Dr Hein was a recipient of the silver jubilee medal, was first secretary of the Anthropologischen Gesellschaft of Vienna, a knight of the Spanish Order of Isabela, and an associate editor of the *Internationales Archiv für Ethnographie* in Leiden.

THE ANTHROPOLOGICAL INSTITUTE OF GREAT BRITAIN AND IRELAND has elected the following honorary fellows: Mr A. W. Howitt, for distinguished services to the ethnology of Australia; Dr F. von Luschan, for numerous contributions to ethnology; and Dr S. Reinach, for researches in the early history of civilization in Mediterranean and western Europe.

HENRY BALFOUR, Esq., has been elected president of the Anthropological Institute of Great Britain and Ireland, succeeding Dr A. C. Haddon. The other officers are: E. S. Hartland, Esq., Sir T. H. Holdich, and Prof. G. B. Howes, vice-presidents; J. L. Myres, Esq., honorary secretary; A. L. Lewis, Esq., honorary treasurer.

THE death, in England, in September last, of Mr John Allen Brown, author of numerous papers on geological and anthropological subjects, and of the volume *Palæolithic Man in North-west Middlesex*, has been announced.

DR WALTER HOUGH, of the United States National Museum, during the summer and autumn continued his studies of the prehistoric archeology of some of the ancient pueblo groups of Arizona.

DR THEODOR KOCH started in April last on an ethnographical expedition to the sources of the Yuruá and Yucayali rivers in Brazil and Peru.

NINETEEN STUDENTS have entered the course of American archeology at Phillips Academy, Andover, Mass., and others will doubtless be registered.

THE ANTHROPOLOGY BUILDING at the Louisiana Purchase Exposition will measure 263 by 113 feet and will cost \$115,000.

H. KEMKE has been appointed custos of the Prussia-Museum at Königsberg.

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